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MINERAL WITHDRAWAL
DESERT NATIONAL WILDLIFE RANGE

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FINAL

ENVIRONMENTAL IMPACT STATEMENT

MINERAL WITHDRAWAL

DESERT NATIONAL WILDLIFE RANGE

U.S. FISH AND WILDLIFE SERVICE
PACIFIC REGION
PORTLAND, OREGON

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COVER: DESERT BIGHORN SHEEP BY CHRISTINE HOLDEN
CHAPTER DIVIDERS: DESERT TORTOISE BY JEAN HARRISON

FINAL
ENVIRONMENTAL IMPACT STATEMENT
MINERAL WITHDRAWAL
DESERT NATIONAL WILDLIFE RANGE
CLARK AND LINCOLN COUNTIES, NEVADA

Lead Agency:

U.S. Department of the Interior
Fish and Wildlife Service
Pacific Region

In cooperation with:

U.S. Department of the Interior
Bureau of Land Management
Nevada State Office

and

U.S. Department of the Air Force
USAF Weapons and Tactics Center
Nellis Air Force Base

This Environmental Impact Statement (EIS) has been prepared in compliance with the National Environmental Policy Act (NEPA), U.S. Fish and Wildlife Service (Service) NEPA procedures, and Section 204 of the Federal Land Policy and Management Act.

The Service proposes to withdraw a major portion of the Desert National Wildlife Range (Range) from entry for locatable minerals under terms prescribed by the Mining Law of 1872. The purpose of the withdrawal is to protect the biological and cultural resources of the Range and to prevent uses of the Range that would be incompatible with the purposes for which the Range was established. The Range was established for the protection and maintenance of wildlife, especially the desert bighorn sheep. Other approved objectives of the Range include conservation of biological diversity, especially endangered and threatened species, and protection and maintenance of cultural resources. This EIS provides an assessment of the affects of alternative proposals for withdrawal or exploration and development of minerals on the Range: (A) Wildlife Range Withdrawal, (B) No Action, (C) Limited Entry The preferred alternative is (A) Wildlife Range Withdrawal.

For further information regarding this EIS, contact Mr. Mark A. Strong, U.S. Fish and Wildlife Service, 911 N.E 11th Avenue, Portland, Oregon 97232-4181, telephone (503) 231-2235.

Statement Number: FES 94-7

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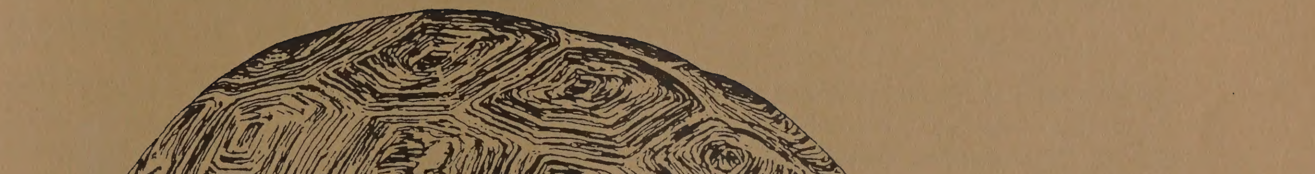
SUMMARY



SUMMARY

PURPOSE OF AND NEED FOR ACTION

The proposed action that is the subject of this Environmental Impact Statement (EIS) is a proposal by the U.S. Fish and Wildlife Service (Service) to withdraw the mineral estate on approximately 311,500 hectares (770,000 acres) of the Desert National Wildlife Range (Range) from entry for locatable minerals for a period of 20 years. The withdrawal would be accomplished through an administrative action of the Secretary of the Interior. The Federal Land Policy and Management Act (FLPMA) of 1976 authorizes the Secretary to make withdrawals where ..."existing and potential resource uses are incompatible with or in conflict with the proposed use."

The purpose of this EIS is to analyze the potential impacts resulting from implementation of the proposed action and the alternatives. The purpose of the proposed action is to protect the biological resources of the Range and prevent uses that would be incompatible with the purposes and objectives of the Range. The Range was originally established for the protection, enhancement, and maintenance of wildlife, especially the desert bighorn sheep. Other approved objectives of the Range include conservation of biological diversity with emphasis on endangered and threatened species and protection and maintenance of cultural resources.

The need for action is evidenced by a threat of degradation or elimination of portions of the existing wildlife habitat, biological diversity, and cultural resources of the Range by exploration and mining under terms prescribed by the Mining Law of 1872. This EIS provides an assessment of the affects of alternative proposals for withdrawal or exploration and development of minerals on the Range.

BACKGROUND

The Executive Order that established the Range did not withdraw the mineral estate as part of the Range. That left a situation referred to as a "split estate" wherein the land surface was withdrawn for a national wildlife refuge while the mineral estate remained unreserved public domain. The mineral estate was open for exploration until the Service initially applied for a withdrawal in 1973. The segregative effect of the 1973 withdrawal application continued until 1991 because of a provision of FLPMA, although it was never perfected. The Service filed a new application for a mineral withdrawal on October 18, 1991, and thereby extended the segregation until October 1993. Due to unavoidable delays in completing the mineral assessment for the withdrawal application, it was not possible to complete the EIS in time to complete the withdrawal by October 1993. Therefore, to prevent the Range from being opened to mineral prospecting and claim filing while the withdrawal was being completed, the Secretary of the Interior authorized a 1-year emergency withdrawal. The emergency withdrawal was implemented by Public Land Order number 7005 on October 13, 1993, and will expire on October 13, 1994.

Beginning in 1940 and continuing to the present, a military withdrawal has been superimposed on the western portion of the Range. The proposed mineral withdrawal would not affect the area overlaid by the military withdrawal.

A wilderness recommendation for a total of 539,425 hectares (1,332,900 acres) of the Range was approved by the President and submitted to Congress in 1975. That portion of the wilderness proposal that is within the proposed mineral withdrawal area is approximately 310,000 hectares (759,000 acres). The recommendation was tabled indefinitely by Congress until a suitable mineral inventory is completed. Pending congressional action, the recommended wilderness areas are being managed to protect the wilderness values identified in the proposal.

Because of the Range's relatively large size, tremendous range of elevation, and long history of protection, a mosaic of nearly every ecological community that occurs in southern Nevada has been preserved in a nearly pristine condition. Desert bighorn sheep, the primary species for which the Range was established, are widely distributed throughout its precipitous terrain. The desert tortoise, a threatened species, occurs at lower elevations in a low density population. There are also eleven category 2 candidate threatened or endangered plant species and 6 category 2 candidate threatened or endangered animal species known to occur or suspected of occurring on the Range.

Although only a small fraction of the Range has been surveyed for cultural resources, many sites have been recorded. In recognition of the Range's rich cultural record, the Sheep Mountain Archaeological District was listed on the National Register of Historic Places in 1974. The 622,080-acre district covers 80 percent of the proposed withdrawal area. Until archaeological evaluation determines otherwise, all recorded and unrecorded sites within the District are considered listed on the National Register of Historic Places.

In January 1992 the Service contracted with the Nevada Bureau of Mines and Geology to assess the mineral potential of the proposed withdrawal area. No identified mineral resources that are considered to be commercially exploitable at the present time were found to be present within the study area. However, examination of data collected during the assessment program defined areas with potential for the discovery of mineral resources. Industrial minerals such as high calcium limestone and cement limestone are considered the most likely to have economic development potential.

DEVELOPMENT OF THE EIS

The Service is the lead agency in development of this EIS. The U.S. Bureau of Land Management (BLM) and the U.S. Air Force (Air Force) are cooperating agencies. The Service administers the Range except for the locatable mineral estate. The BLM administers the locatable mineral estate on the Range, and the portions of the Range are also withdrawn for military purposes by the U.S. Air Force.

SCOPE OF THE EIS

This EIS will focus on the compatibility of exploration and extraction of available locatable minerals with the purposes for which the Range was established and the objectives of the National Wildlife Refuge System. The EIS will also address the effects of mineral entry or withdrawal on the social and economic conditions of the local and regional area of Lincoln and Clark Counties.

ISSUES

Issues to be addressed in the EIS were identified by the EIS team with input from a variety of public agencies, private organizations, and the general public. Most of this input was received during the public scoping period in February and March 1992.

The concerns expressed by all participants in the scoping process were consolidated by the EIS team into a list of issues or potential impact topics that would result with implementation of the proposed action or the alternatives. The comprehensive issue or theme of the EIS is the general compatibility of the proposed action and alternatives with the purposes and objectives of the Range and the National Wildlife Refuge System. Specifically, the issues identified for analysis in the EIS are the potential impacts of the proposed action and alternatives on the following elements of the environment:

- -- mineral deposits
- -- ground water and springs
- -- desert bighorn sheep
- -- desert tortoises
- -- candidate threatened and endangered species
- -- desert ecosystem/ biological diversity
- -- cultural resources
- -- local and regional economy
- -- wildlife-related recreation
- -- visual resources

ALTERNATIVES

The alternatives in this EIS are: (A) Wildlife Range Withdrawal - the proposed action, (B) No Action, and (C) Limited Entry. The alternatives are defined by describing the area(s) that would be open and closed for entry for locatable minerals, a likely mineral development setting, and a description of any changes in other management activities that would result from mineral exploration and development activities. Reclamation that would be required under State and Federal regulations is assumed to occur after entry activity is complete.

The status of the wilderness recommendation for the Range would significantly affect mineral entry regulations. It is not known whether Congress will take action on the wilderness recommendation during the 20 year term of the proposed withdrawal. However, those alternatives for which wilderness status is pertinent to mineral entry regulations are based on the assumption that the wilderness recommendation would be considered by Congress and the area would be released from further consideration. Alternatives that assumed that the Range would be open for mineral entry and protected by either the wilderness recommendation or wilderness designation are not considered reasonable because mineral exploration would be severely restricted and mineral development would not be allowed.

ALTERNATIVE A: Alternative A, Wildlife Range Withdrawal, is the proposed action and would maintain the current management and utilization of the Range. The area that would be withdrawn would be that part that is set aside exclusively for the Wildlife Range (i. e., that part that is not secondarily withdrawn by Congress for military use). The proposed withdrawal area encompasses approximately 311,500 hectares (770,000 acres) mostly in the eastern portion of the range plus a smaller parcel in the southwest corner.

Under this alternative, the withdrawal area would continue to be closed to entry for exploration, claiming, and extraction of locatable minerals for an additional 20 years, starting in October 1993 and ending in 2013. Wildlife, wildlife habitat, the desert ecosystem, cultural resources, and restricted public use would continue to be managed as the priority objectives of the Range. It is assumed that the Service's current regulations to protect the Range's wilderness values would be continued throughout the 20-year term of the proposed withdrawal.

ALTERNATIVE B: Under this alternative, No Action, there would be no mineral withdrawal. The existing wilderness recommendation would remain in place for the first 8 years of the proposed withdrawal period, but by 2001 the area would be released from further wilderness consideration. The entire area proposed for withdrawal in Alternative A would be open to mineral entry without wilderness constraints for the last 12 years of the proposed withdrawal.

For the purposes of analysis, the following mineral entry activities would be projected to take place under this alternative:

Claims and a Plan of Operations would be filed for a limestone mine on Gass Peak near the south-central boundary. The Plan of Operation would be approved when the Range was released from wilderness consideration, and a mine would be developed and mining would take place during the last 12 years of the proposed withdrawal. The mine would employ up to 30 people and produce approximately 545 metric tons (600,000 short tons) per year of finished products including cement, redi-mixed concrete, and other lime products. The developed area would cover a total of approximately 81 hectares (200 acres) including 53 hectares (130 acres) for the plant and 28 hectares (70 acres) for the quarry. The plant would require numerous large buildings, access roads, and utilities corridors.

Claims would be filed at a site in the northeast Sheep Range, and after the area was released from the wilderness recommendation, a plan of operations would be filed for surface disturbance of more than 5 acres. Surface disturbance would occur on approximately 5 acres, but no access or utility improvements would be made. No production would occur during the 20-year term of the proposed withdrawal, and the site would eventually be reclaimed and abandoned. Claims and Notices of disturbance of 5 acres or less would be filed for 22 other sites of mineral anomalies identified in the mineral assessment. Surface disturbance would occur on less than 5 acres at each site, and reclamation would occur on most.

Casual prospecting (without mechanized equipment or explosives) would occur at numerous other unidentified sites throughout the proposed withdrawal area. Locations of prospecting would not be restricted, but most would be near open roads and in the areas identified with high potential for minerals. Surface disturbance at these sites would be "negligible," but the Service would have no prior notification or control over the sites selected.

This alternative would maintain the current management and utilization of the Range for all resources except minerals and off-road vehicle use where permitted. Vehicles would continue to be restricted to designated roads after wilderness considerations were removed, but exceptions would be made by permit as necessary for mineral prospecting and development. An estimated 50 special use permits would be issued for off-road vehicle use for the purpose of mineral prospecting during the term of the proposed withdrawal. Desert bighorn sheep, the desert ecosystem, cultural resources, and restricted wildlife-related public use would continue to be the priority objectives of the Range.

ALTERNATIVE C: Under this alternative, Limited Entry, most of the Range would be withdrawn, but a limited area in the southern Las Vegas Mountain Range would be open for mineral entry. The existing wilderness recommendation would remain in place for the first 8 years of the proposed withdrawal period, but by 2001 the area would be released from further wilderness consideration.

For the purposes of analysis, the following mineral entry activities would be projected to take place under this alternative:

Claims and a Plan of Operations would be filed for a limestone mine on Gass Peak near the south-central boundary. All features of this mine would be the same as described under Alternative B above. Claims and Notices for disturbance of less than 5 acres would be filed for 2 other sites in the southern Las Vegas Range area where anomalies were identified in the mineral assessment. Surface disturbance would occur on less than 5 acres at each site, and reclamation would occur on both. Casual (non-mechanized) prospecting would occur at several other unidentified sites in the southern Las Vegas Range. Locations of prospecting would not be limited. Surface disturbance at these sites would be "negligible," but the Service would have no prior notification or control over the sites selected.

This alternative would maintain the current management and utilization of the Range for all resources except minerals and restricted off-road vehicle use. Vehicles would continue to be restricted to designated roads after wilderness considerations were removed, but exceptions would be made by permit as necessary for mineral prospecting and development. An estimated 10 special use permits would be issued for off-road vehicle use for the purpose of mineral entry activities during the term of the proposed withdrawal. Desert bighorn sheep, the desert ecosystem, cultural resources, and restricted wildlife-related public use would continue to be the priority objectives of the Range.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

ALTERNATIVE A: WILDLIFE RANGE WITHDRAWAL

Implementation of Alternative A, Wildlife Range Withdrawal (the proposed action), would reinstate and maintain an existing closure to entry for locatable minerals on the Range and thereby prevent an activity that would be incompatible with the purposes and objectives for which the Range was established. Desert bighorn sheep, desert tortoises, candidate threatened or endangered plants and animals, the desert ecosystem and its plants and wildlife, and wildlife-related recreation would all continue to benefit from the withdrawal and the undisturbed natural environment that it would maintain. Ground water and springs, cultural resources, and visual resources would all continue to be protected and undisturbed. Opportunities for economic development of limestone deposits would be foregone, but there would be no significant economic impact to the local or regional economy. Existing mineral reserves would be maintained in place for future consideration when the withdrawal expired.

ALTERNATIVE B: NO ACTION

Up to 50 desert bighorn sheep would be displaced from seasonally crucial habitat in the southern Las Vegas Range, and recovery of the bighorn population would be delayed. Vegetation would be destroyed and animals would be displaced from a minimum of 145 hectares (360 acres) of habitat, mostly the desert shrub community. While measurable population changes would not be expected for most species, the productivity and carrying capacity of the ecosystem would be reduced, and there would be losses to the Range's biological diversity near sites where habitat was destroyed. Small mammals, reptiles, and breeding birds would be the most vulnerable.

Potential habitat for 14 threatened desert tortoises would be destroyed and there is a possibility that a few threatened desert tortoises would be lost. There could be inadvertent destruction of individuals or highly localized populations of candidate threatened or endangered plants. The carrying capacity for loggerhead shrikes and chuckawallas would be reduced.

A projected limestone mine in the southern Las Vegas Range would increase income in Clark County by $2.57 million annually. This potential income represents less than 3/100ths of 1 percent of the total Clark County income of over $9 billion annually, and would not be considered significant.

If alternative B was implemented, the relatively undisturbed nature of the Range, and the nearly natural habitat conditions it provides to wildlife, would be seriously disrupted by human activities. These activities would preclude optimum conditions for desert bighorn sheep, desert tortoises, candidate threatened and endangered species, the desert ecosystem, and wildlife-related recreation and are therefore incompatible with the purposes of the Range. Inadvertent but irretrievable destruction of cultural sites would also be likely.

ALTERNATIVE C: LIMITED ENTRY

Up to 50 desert bighorn sheep would be displaced from seasonally crucial habitat in the southern Las Vegas Range, and recovery of the bighorn population would be delayed. Vegetation would be destroyed and animals would be displaced from a minimum of 88 hectares (219 acres) of habitat, mostly the desert shrub community. While measurable population changes would not be expected for most species, the productivity and carrying capacity of the ecosystem would be reduced and there would be losses to the Range's biological diversity where habitat was destroyed. Small mammals, reptiles, and breeding birds would be the most vulnerable. There is also a potential that a small number of threatened desert tortoises would be lost, and that the carrying capacity for loggerhead shrikes and chuckawallas would be reduced.

A projected lime mine in the southern Las Vegas Range would increase income in Clark County by $2.57 million annually. This potential income represents less than 3/100ths of 1 percent of the total Clark County income of over $9 billion annually, and would not be considered significant.

If alternative C was implemented, the relatively undisturbed nature of the limited open part of the Range, and the nearly natural habitat conditions it provides to wildlife, would be disrupted by human activities. These activities would preclude optimum conditions for desert bighorn sheep, desert tortoises, candidate threatened and endangered species, and the desert ecosystem, and are therefore incompatible with the purposes of the Range.

COMPARISON OF ALTERNATIVES

Table S-1 presents a matrix that summarizes and compares consequences of each alternative relative to the issues developed during scoping. The focus of this EIS is the need to protect a major portion of the Range from secondary (i.e., non-wildlife related) economic uses that are incompatible with the primary purposes for which it was established. The primary purposes and objectives of the Range are to protect desert bighorn sheep; endangered, threatened, and candidate species; the desert ecosystem and its biological diversity; and cultural resources. The Mining Law of 1872 allows the Range to be opened to locatable mineral entry, but this mineral entry would be incompatible with the primary purposes for the Range. The Federal Land Policy and Management Act of 1976 provides an administrative mechanism to withdraw the Range from mineral entry and prevent this incompatible secondary use.

Table S-1. Issue-oriented Comparison of Alternatives.

ISSUES	ALTERNATIVE A
IMPACTS TO MINERAL DEPOSITS	No impacts. Deposits would remain in place.
IMPACTS TO GROUND WATER AND SPRINGS	No impacts. Continued availability to wildlife.
IMPACTS TO DESERT BIGHORN SHEEP	Significant benefits. Optimum recovery of population.
IMPACTS TO DESERT TORTOISES	Significant benefits. Optimum contribution to recovery.
IMPACTS TO CANDIDATE T&E SPECIES	Significant benefits. Optimum contribution to recovery.
IMPACTS TO DESERT ECOSYSTEM AND BIOLOGICAL DIVERSITY	Significant benefits. No loss of diversity or disruption of crucial relationships.
IMPACTS TO CULTURAL RESOURCES	No impacts. No inadvertent destruction of sites.
IMPACTS TO LOCAL AND REGIONAL ECONOMY	Opportunity foregone for insignificant increase to local economy.
IMPACTS TO WILDLIFE-RELATED RECREATION	No significant impacts. Minor benefit from protection of wildlife habitat.
IMPACTS TO VISUAL RESOURCES	No impacts. Continue unaffected.

ALTERNATIVE B	**ALTERNATIVE C**
Minor depletion of limestone deposits from mine.	Minor depletion of limestone deposits from mine.
Moderate potential for disruption of ground water flow and springs by prospecting.	Slight potential for degradation of springs.
Displacement of 50 sheep from seasonal range. Disruption of lambing. Delayed population recovery.	Displacement of 50 sheep from seasonal range. Delayed population recovery.
Loss of potential habitat for 14 desert tortoises.	Loss of potential habitat for 11 desert tortoises.
Potential loss of candidate plants and animals.	Potential loss of candidate plants and animals.
Habitat destroyed on 145 hectares. Displace wildlife from crucial springs.	Habitat destruction on 88 hectares. Displace wildlife from crucial habitat at springs.
High potential for irretrievable destruction of cultural sites.	Minor potential for inadvertent destruction of sites.
Minor benefit to local economy from limestone mine.	Minor benefit to local economy from limestone mine.
Significant loss of solitude and wildlife observation.	Minor loss of solitude and wildlife observation.
Significant degradation from limestone mine.	Significant degradation from limestone mine.

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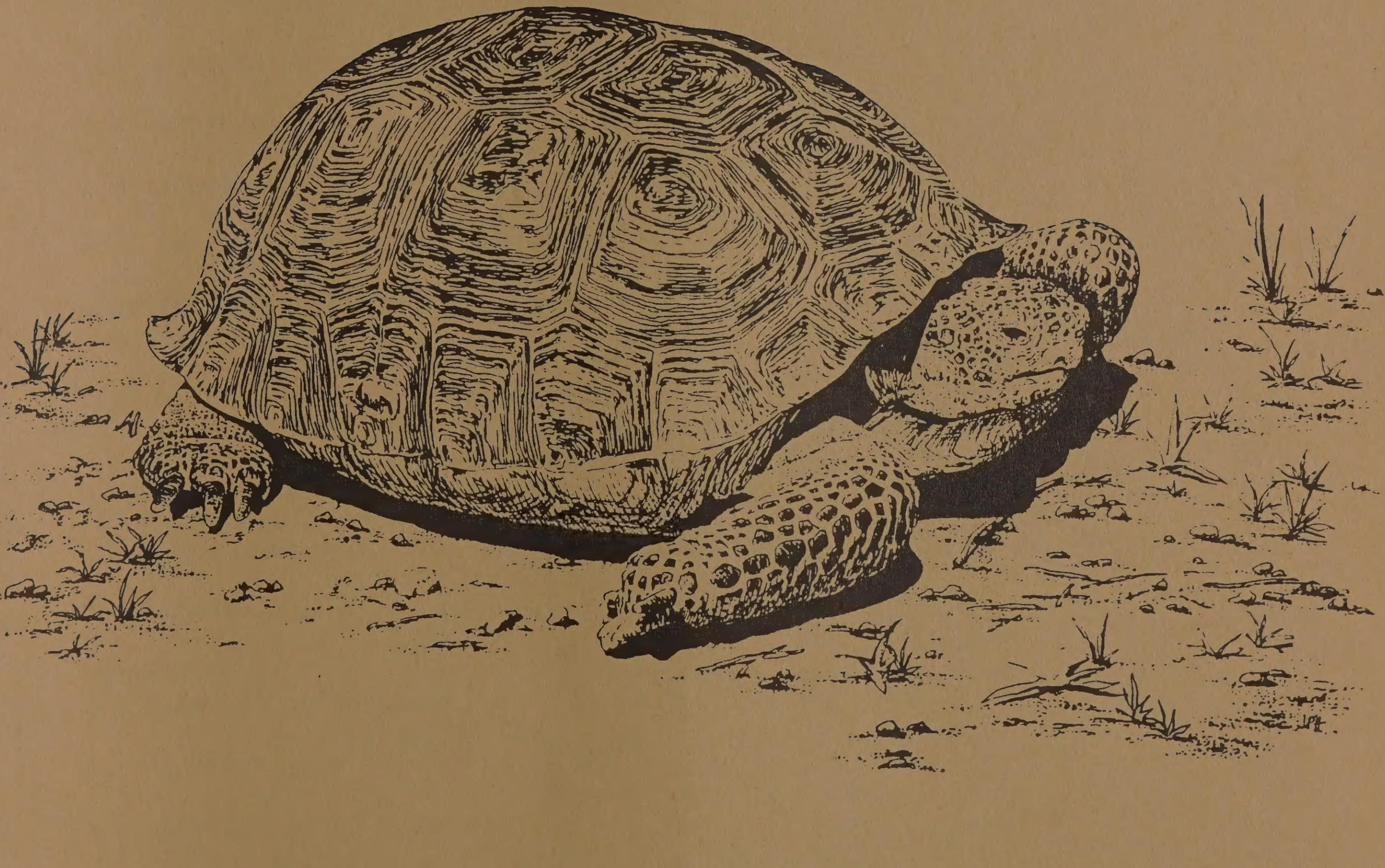

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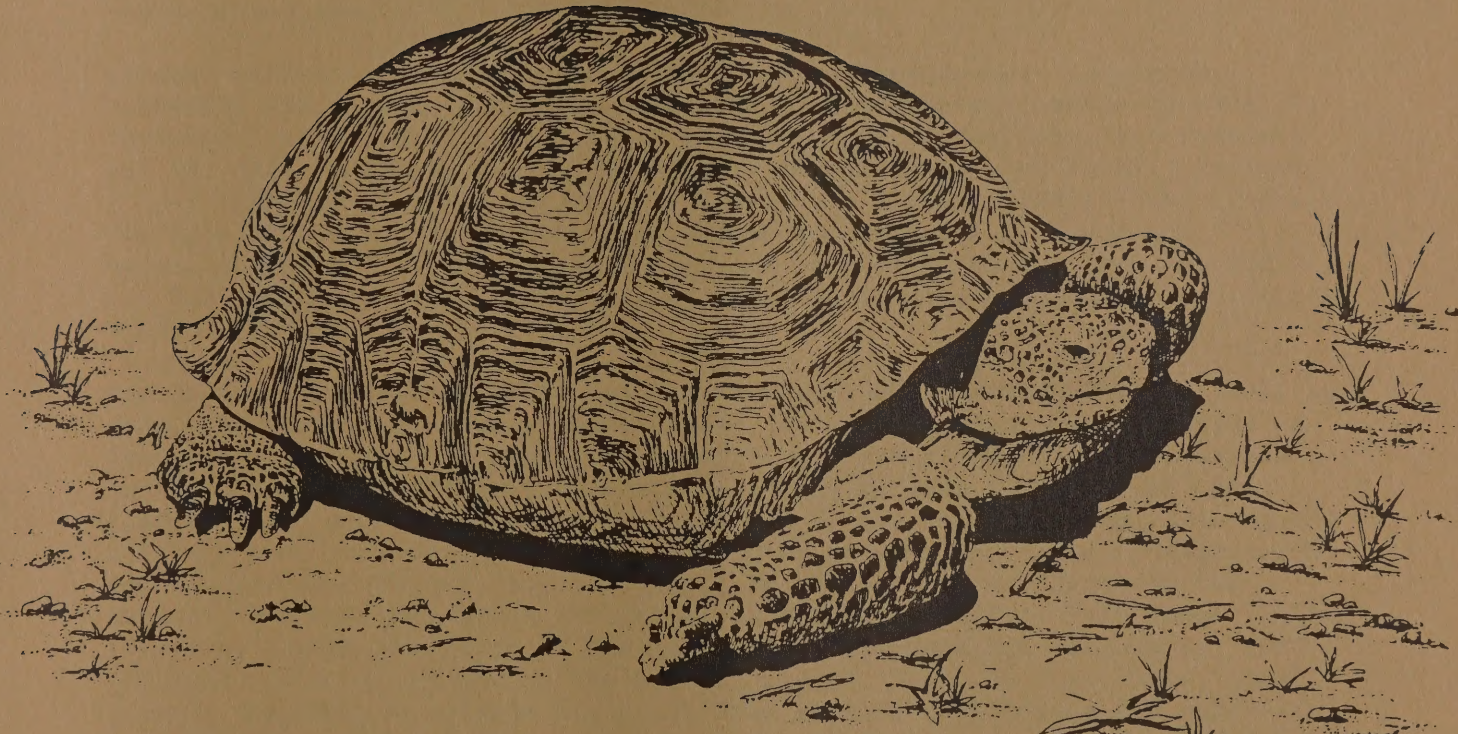
CHAPTER I

INTRODUCTION



CHAPTER ONE
1.0 INTRODUCTION

1.1 PURPOSE OF AND NEED FOR ACTION

The proposed action that is the subject of this Environmental Impact Statement (EIS) is to withdraw the mineral estate on approximately 311,500 hectares (770,000 acres) of the Desert National Wildlife Range (Range) from entry for locatable minerals for a period of 20 years beginning in October 1993 (figure 1-1). Mineral entry is authorized by the Mining Law of 1872, as amended (17 Stat 91; 30 U.S.C. 22 et seq.). The Mining Law and its subsequent amendments govern the exploration for and extraction of locatable minerals on public land.

The withdrawal would be accomplished through an administrative action of the Secretary of the U.S. Department of the Interior (Secretary) in response to a petition/application by the U.S. Fish and Wildlife Service (Service). The Federal Land Policy and Management Act (FLPMA) of 1976 (P.L. 94-579; 90 Stat. 2743; 43 U.S.C. 1701,) authorizes the Secretary to make withdrawals where "... existing and potential resource uses are incompatible with or in conflict with the proposed use."

Federal mineral estate falls into one of three categories: locatable, leasable, and salable minerals (Maley 1983). Locatable minerals include (1) "uncommon varieties of sand, stone, gravel, cinders, pumicite, or cinders"; and (2) "All 'valuable mineral deposits', except those specifically excluded . . . as Leasable Minerals and Salable Minerals." Maley (1983) lists minerals for each class, but any mineral can become locatable if it meets the definition of a "valuable mineral deposit" in Federal mining laws, 30 USC 22, and the definition of a "locatable mineral" in 43 Code of Federal Regulations (CFR) 3812.1.

The proposed withdrawal would not remove the mineral estate from availability under the mineral leasing or sales laws. Current Service administration of leasable and salable minerals would continue. Under the current situation leasable and salable minerals on the Range may be made available at the discretion of the Secretary through the use of applicable mineral leasing and selling laws. Currently, mineral leasing on refuges is closed by regulation for oil and gas (43 CFR 3101.5), except in the case of drainage (43 CFR 3100.2); and for geothermal resources (43 CFR 3201.1-6(c)). The Range is not closed by law to operation of The (Minerals) Materials Act of July 31, 1947 (61 Stat. 681) as amended by the Act of July 23, 1955 (69 Stat. 367), which governs disposal of salable minerals. The selling of minerals and materials is regulated by 50 CFR 29.1, which requires that sales must be compatible "with the purposes for which the refuge was established."

The purpose of this EIS is to analyze the potential impacts resulting from implementation of the proposed action and the alternatives as required by the National Environmental Policy Act (NEPA) of 1969, as amended (P.L. 91-190; 42 U.S.C. 4321-4347). The purpose of the proposed action is to protect the biological resources of the Range and prevent uses that would be incompatible

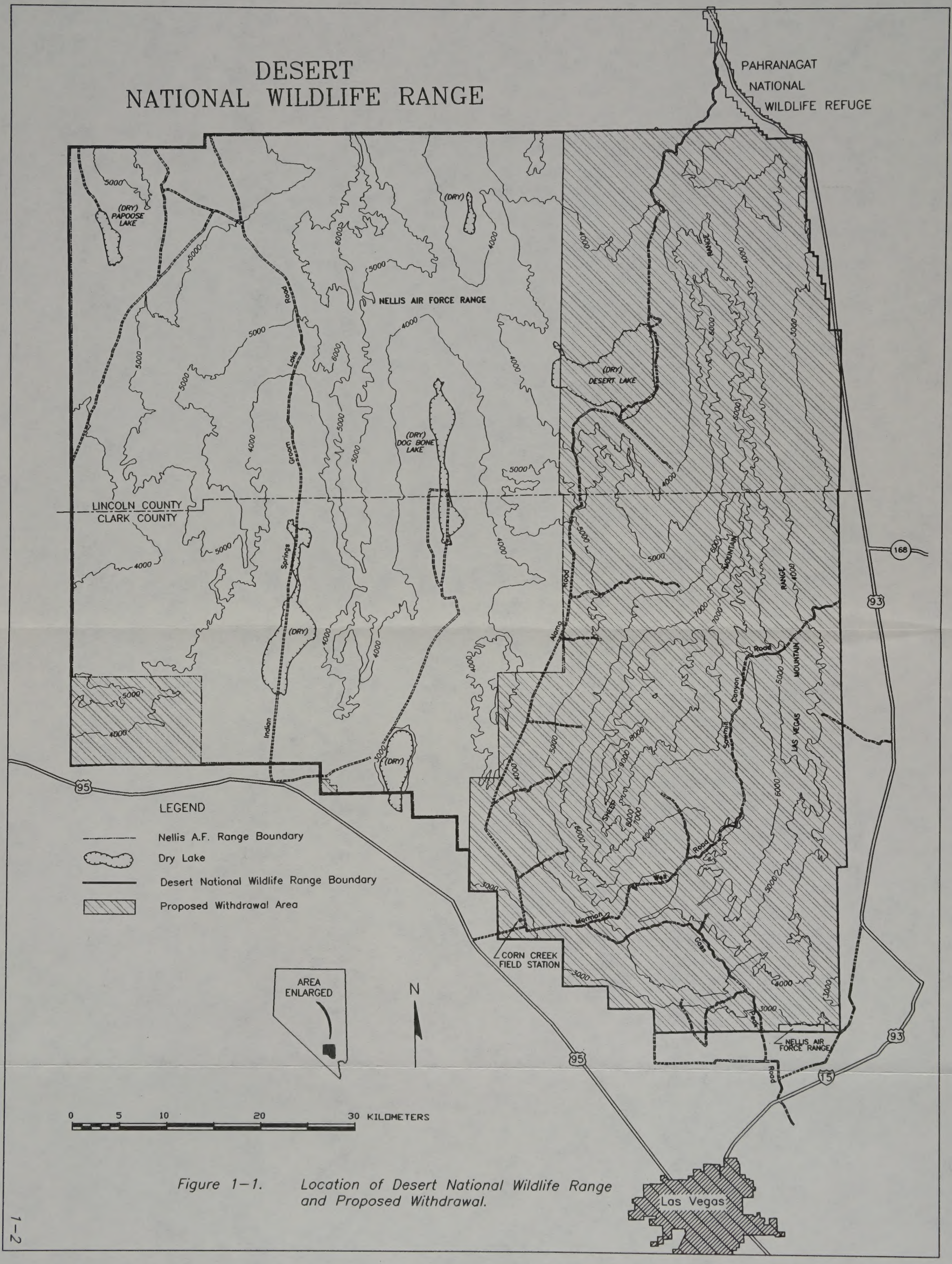

DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT
NATIONAL
WILDLIFE REFUGE
(DRY) PAPOOSE LAKE
(DRY)
NELLIS AIR FORCE RANGE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
LINCOLN COUNTY
CLARK COUNTY
Groom Lake Road
Indian Springs
(DRY)
Alamo Road
SHEEP RANGE
MOUNTAIN
RANGE
LAS VEGAS MOUNTAIN RANGE
Sawmill Canyon Road
Mormon Well Road
Gass Peak Road
CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
168
93
95
15
Las Vegas
5000
4000
3000
6000
7000
8000
LEGEND
Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
Proposed Withdrawal Area
AREA ENLARGED
N
0
5
10
20
30 KILOMETERS

Figure 1–1. Location of Desert National Wildlife Range and Proposed Withdrawal.

with the purposes and objectives of the Range. (Refer to section 3.2.4 for further details on purposes and objectives of the Range.) Action is required because the existing wildlife habitat, biological diversity, and cultural resources of the Range are threatened by exploration and mining under terms prescribed by the Mining Law of 1872, as amended (17 Stat 91; 30 U.S.C. 21 et seq.). This EIS provides an assessment of the effects of alternative proposals for withdrawal or exploration and development of minerals on the Range.

The Executive Order that established the Range did not withdraw the mineral estate as part of the Range. That left a situation referred to as a "split estate" wherein the land surface was withdrawn for a national wildlife refuge while the mineral estate remained unreserved public domain. In 1973, the Service applied to withdraw the entire Range from mineral entry. The purpose of that proposed withdrawal was to further protect the wildlife and desert ecosystem on the Range because protection provided by existing mineral entry laws and regulations was not adequate to meet the purposes of the Range.

The 1973 withdrawal application was pending when FLPMA was passed in 1976. FLPMA provided that all applications for mineral withdrawal that were pending on the date the law was approved must be processed to conclusion within fifteen years or the segregative effect of the application would expire. FLPMA also required a mineral assessment before a withdrawal could be approved. The 1973 withdrawal application was never perfected, mainly because funds were never available to conduct an adequate mineral assessment.

On October 18, 1991, the Service submitted a petition/application and legal description to withdraw the entire Range from mineral entry including the portion overlaid by the Nellis Air Force Bombing Range (Bombing Range). This application extended the segregation until October 1993. Due to unavoidable delays in completing the mineral assessment for the withdrawal application, it was not possible to complete the EIS in time to complete the withdrawal by October 1993. Therefore, to prevent the Range from being opened to mineral prospecting and claim filing while the withdrawal was being completed, the Secretary of the Interior authorized a 1-year emergency withdrawal. The emergency withdrawal was implemented by Public Land Order number 7005 on October 13, 1993, and will expire on October 13, 1994.

During the scoping process for this EIS, the proposed action was modified to withdraw only that portion of the Range that is not secondarily withdrawn for military use. The withdrawal proposal was modified because the Bombing Range is already withdrawn until 2001 by Public Law 99-606 and because it was not feasible to complete a mineral assessment of the Bombing Range in the time available due to restrictions on access. A copy of the legal description of the partial withdrawal is shown in Appendix A. A mineral assessment has now been completed and this EIS will complete the requirements of the withdrawal application.

1.2 SCOPE OF THE EIS

This EIS will focus on the compatibility of exploration and extraction of available locatable minerals with the purposes and objectives of the Range. The social and economic conditions of the local and regional area of Lincoln and Clark Counties will also be addressed as part of the analysis. The following documents are incorporated by reference into this EIS because of interrelationships with the proposed action.

a. Final Environmental Impact Statement, Operation of the National Wildlife Refuge System, submitted by the U.S. Department of the Interior, Fish and Wildlife Service, in November 1976 (USFWS 1976). This document provides a programmatic plan and NEPA compliance for operation of the National Wildlife Refuge System. The Service is currently in the process of updating this plan and EIS (refer to document (b) below). This Final EIS and its draft update discuss the National Wildlife Refuge System Administration Act of 1966 (P.L. 89-669, 80 Stat. 927, 16 U.S.C. 668dd-668ee) which authorizes the Secretary of the Interior, under such regulations as he may prescribe, to "permit the use of any area within the [National Wildlife Refuge] System for any purpose including, but not limited to, hunting, fishing, public recreation and accommodations, and access whenever he determines that such uses are compatible with the major purposes for which such areas were established" (emphasis added).

b. Draft Refuges 2003 - A Plan for the Future of the National Wildlife Refuge System, submitted for public review and comment by the U.S. Department of the Interior, Fish and Wildlife Service, in January 1993 (USFWS 1993). This draft document presents a programmatic EIS on a proposed system-wide plan for operating the National Wildlife Refuge System and alternatives to the proposed plan. The plan and EIS, when finalized, will update and replace the 1976 EIS cited above. The 1976 EIS is being updated because the refuge system has grown by more than 100 refuges and nearly 50 million acres, and internal and external challenges to refuges have changed since 1976. The draft plan would greatly reduce incompatible secondary (non-wildlife oriented) uses of refuges as required by the National Wildlife Refuge Administration Act of 1966 (refer to (a) above).

c. Final Environmental Statement, Proposed Desert Wilderness Area, Nevada, submitted by the U.S. Department of the Interior, Fish and Wildlife Service, in August 1975 (USFWS 1975). Refer to section 2.2.6 of this EIS for more information on the wilderness proposal.

1.3 IDENTIFICATION OF ISSUES

Issues to be addressed in the EIS were identified by the EIS team with input from a variety of public agencies, private organizations, and the general public. Most of this input was received during the public scoping period in February and March 1992. The public involvement activities which occurred as part of the scoping process are summarized in Chapter Five.

The concerns expressed by all participants in the scoping process were consolidated by the EIS team into a list of issues or potential impact topics that would result with implementation of the proposed action or the alternatives. The comprehensive issue or theme of the EIS is the general compatibility of the proposed action and alternatives with the purposes and objectives of the Range and the National Wildlife Refuge System. Specifically, the issues identified for analysis in the EIS are the potential impacts of the proposed action and alternatives on the following elements of the environment:

-- mineral deposits
-- ground water and springs
-- desert bighorn sheep
-- desert tortoises
-- candidate threatened and endangered species
-- desert ecosystem/ biological diversity
-- cultural resources
-- local and regional economy
-- wildlife-related recreation
-- visual resources

Impacts to military use of the Range were considered a potential issue when the proposed action was to withdraw the entire Range from mineral entry, including the portion that is also withdrawn for military use. When the proposal was modified to withdraw only that part of the Range that is not also withdrawn by the military, potential effects to military use were no longer considered an issue.

Impacts to wilderness values were considered a potential issue during the scoping process. However, the wilderness issue was later eliminated from this EIS because it has already been the proposed action of an EIS (USFWS 1975) and because the decision on wilderness designation is now in the hands of Congress. (Refer to Chapter Two for a discussion on the interaction of wilderness designation and mineral entry and the effect of this interaction on the alternatives.)

Impacts to air quality were considered a potential issue during the scoping process. However, upon analysis, this issue was eliminated because impacts to the Las Vegas airshed were not considered significant. Some additional dust particles would be created by mining activities in some of the alternatives, but adverse impacts to air quality would not be measurable or significant.

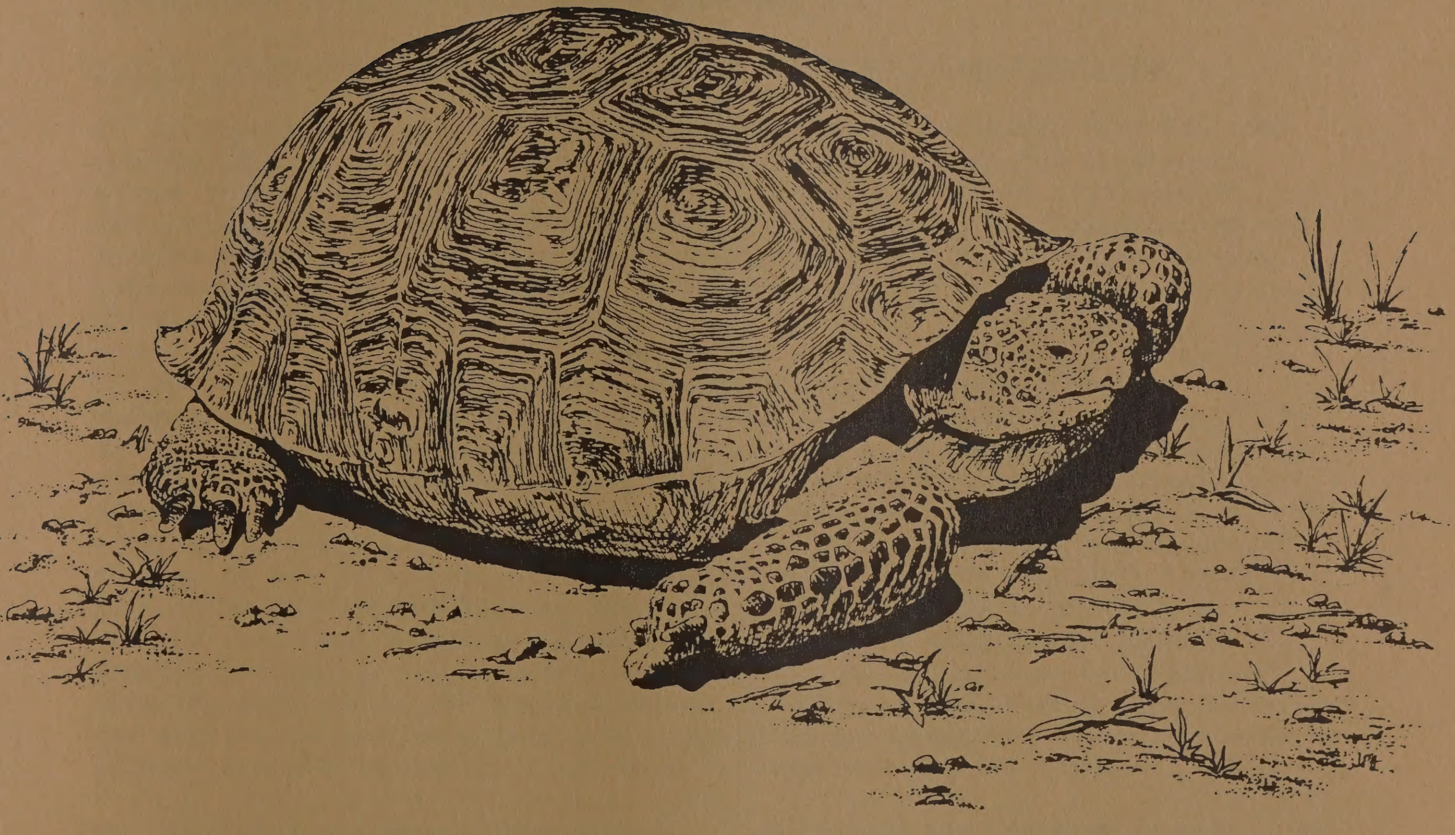
Impacts to soils and plant communities were each considered potential issues during the scoping process. However, a separate analysis of each of these issues did not result in significant impacts and was repetitive of the analysis of impacts to the desert ecosystem. Therefore, they were eliminated as separate issues, and are discussed as integral components of the desert ecosystem.

1.4 THE DECISION MAKING PROCESS

The Service is the lead agency in development of this EIS. The U.S. Bureau of Land Management (BLM), Nevada State Office and Las Vegas District Office, and the U.S. Air Force Weapons and Tactical Center, Nellis Air Force Base (Air Force), are cooperating agencies. The Service administers the Range except for the locatable mineral estate. The BLM administers the locatable mineral estate on the Range, and portions of the Range are also withdrawn for military purposes by the Air Force.

CHAPTER 2

ALTERNATIVES



CHAPTER TWO
2.0 ALTERNATIVES

2.1 DEVELOPMENT OF THE ALTERNATIVES

Alternatives to be addressed in the EIS were identified by the EIS team with input from a variety of public agencies, private organizations, and the general public. This input was mostly received during the public scoping period in February and March 1992. The public involvement activities that occurred as part of the scoping process are summarized in Chapter Five.

Several different proposals for protection of the wildlife resources of the Range were identified during the scoping process. Most of these proposals addressed selective withdrawals of some minerals and not others, or implementing mitigating surface protection and/or reclamation measures to ensure that the Range was adequately protected during, or restored after, exploration and mining. Those measures that are reasonable and consistent with existing mining law and regulations are included as part of the alternatives addressed in the EIS. Those proposals that are not reasonable or consistent with existing mining law and regulations are discussed below as alternatives dismissed from further consideration.

2.1.1 ALTERNATIVES DISMISSED FROM FURTHER CONSIDERATION

a. Designation as an Area of Critical Environmental Concern. The EIS team considered an alternative that would protect the wildlife and wilderness values of the Range through the enhanced surface protection regulations available for Areas of Critical Environmental Concern. This alternative was dismissed because the regulations allowing this designation are applicable only on public land on which the surface management rights are administered by the BLM.

b. Withdraw leasable and saleable minerals as part of the proposed withdrawal. The team considered an alternative to best protect the wildlife and wilderness values of the Range by including a withdrawal of the leasable and salable classes of minerals in the proposed action along with locatable minerals. (Refer to the description of the proposed action in Chapter One for a definition of these classes of minerals.) This alternative was dismissed because it was determined that the regulations currently available to the Service in the Code of Federal Regulations (CFR sections 43 and 50) for administration of leasable and salable minerals are adequate to provide the desired protection for wildlife and wilderness values without a withdrawal. Existing regulations for administration of leasable and salable minerals allow the Service to require a permit with mitigating surface protection measures or to deny entry if necessary to prevent incompatible uses of refuges.

c. Selective withdrawal from activities that cause the greatest impact. The team considered an alternative to protect the most important wildlife and wilderness values by selectively withdrawing only those areas with the highest value for wildlife and wilderness from only those exploration and mining activities which have the greatest impact. This alternative was dismissed because the 1872 Mining Law and pertinent regulations do not allow a withdrawal from only selected mineral entry activities. The area of the withdrawal may be varied and the class(es) of mineral to be withdrawn may be varied, but for the locatable class of minerals an area is either open to entry or withdrawn.

d. **Withdraw the entire Range.** The team originally proposed to withdraw the entire Range, including the portion overlaid by the Nellis Air Force Range. This alternative was later dismissed because the Air Force Range is already withdrawn until 2001 by Public Law 99-606 and because it was not feasible to complete a mineral assessment of the Air Force Range in the time available due to restrictions on access. Public Law 99-606 requires a mineral survey and draft EIS to be completed by the Air Force by 1998 for the military withdrawal section of the Range.

e. **Withdraw Primary Wildlife Habitat.** The team considered an alternative that would have withdrawn the area(s) most important for desert bighorn sheep, and left the remainder of the Range open for mineral entry. This alternative was originally selected for analysis in the EIS during the scoping process, but it was eventually dismissed because it was not significantly different from the proposed action. When the location of mineral deposits became known in the mineral assessment final report, it was apparent that most of the areas that were identified as having a high potential for discovery of mineral resources would have been withdrawn under both this alternative and the proposed action.

f. **Withdraw the Recommended Wilderness Areas.** The team considered an alternative that would have withdrawn the area recommended for wilderness and left the remainder of the Range open for mineral entry. This alternative was originally selected for analysis in the EIS during the scoping process, but it was eventually dismissed because it was not significantly different from the proposed action. When the location of mineral deposits became known in the mineral assessment final report, it was apparent that most of the areas that were identified as having a high potential for discovery of mineral resources would have been withdrawn under both this alternative and the proposed action.

g. **No Action with Wilderness.** The team considered an alternative that would have allowed mineral entry in the entire area proposed for withdrawal, but the existing wilderness recommendation would remain in place for the 20 year term of the proposed withdrawal. This alternative was dismissed because it would not allow feasible mineral entry, and was therefore not a reasonable alternative to the proposed action. If the Range was open for mineral entry and protected by the wilderness recommendation, mineral exploration would be severely restricted and mineral development would not be allowed.

h. **Limited Entry with Wilderness.** The team considered an alternative that would have allowed mineral entry into a limited area in the southeastern portion of the Range, but the existing wilderness recommendation would remain in place for the 20 year term of the proposed withdrawal. This alternative was dismissed because it would not allow feasible mineral entry, and was therefore not a reasonable alternative to the proposed action. If a portion of the Range was open for mineral entry and protected by the wilderness recommendation, mineral exploration would be severely restricted and mineral development would not be allowed.

i. **Limited Entry in Selected Areas.** Prior to completion of the mineral assessment, the team proposed an alternative that would have withdrawn much of the Range and allowed locatable mineral entry in selected areas of the Range that were most accessible _if_ they also had a high potential and economic feasibility for mineral development. The areas considered as most accessible included the southern Spotted Mountains (the southwestern section of the Range near Indian Springs Auxiliary Field), the southern Las Vegas Mountains (southeastern portion of the Range), and the northeastern Sheep Mountains (area south of Lower Pahranagat Lake in the northeastern portion of the Range). Mineral development potential was evaluated using the final report of the mineral assessment (Tingley et al. 1993) (tables 3-1 and 3-2 and figures 3-7, 3-8, and 3-9).

The southern Spotted Mountains area has a high potential for industrial minerals. However, this area was eliminated from further evaluation because the distance from the mineral deposits to Las Vegas (approximately 60 miles) was considered too far for economically feasible development of industrial minerals at this time. There are other areas with similar mineral deposits available for development closer to Las Vegas.

The final mineral assessment also identified limited industrial mineral deposits with a high potential for development in the northeastern Sheep Mountains. However, this area was also eliminated from further evaluation because it was considered too far to Las Vegas (approximately 80-85 miles) for economically feasible development of industrial minerals at this time.

The southern Las Vegas Mountains have both a high potential for industrial minerals and a proximity to Las Vegas where the minerals could be used in construction. Selected alternative C (see Section 2.2.2) addresses limited entry in only the southern Las Vegas Mountains.

2.1.2 DEFINING THE ALTERNATIVES

The three alternatives described in this chapter are: (A) Wildlife Range Withdrawal Alternative - the proposed action; (B) No Action; and (C) Limited Entry. These are considered all the reasonable alternatives for locatable mineral management on the Range.

Mineral Development Setting. For the purposes of analysis, the selected alternatives are defined below by describing the major locatable mineral entry activities that would take place (exploration, claiming, and extraction) and the area(s) that would be open to or withdrawn from these activities. Also, for alternatives that would allow at least some of the Range to be open for locatable mineral entry (alternatives B and C), the description includes a likely mineral exploration and development setting during the 20-year period of the proposed withdrawal. The mineral exploration and mining setting will include, where applicable, the type of mineral(s) and mining technique(s), an estimate of the area that would be disturbed, and a reference to the regulations that would apply. All environmental protection and reclamation that could be required under the Federal and State regulations will be assumed to occur during entry activities and after activities are complete.

The description of the mineral development setting for alternatives B and C include an assumption that the wilderness proposal will remain in place for the first 8 years of the withdrawal, but the area will be released from wilderness constraints for the last 12 years. Mineral entry regulations are significantly different for land being studied or recommended for wilderness status than for land not being studied or recommended for wilderness.

Mineral Entry Regulations. As unreserved public domain, the locatable mineral estate on the Range would fall under the jurisdiction of the BLM, and locatable mineral entry would be administered under the regulations in either 43 CFR 3802 (Wilderness Review lands) or 43 CFR 3809 (all other public domain). However, with the consent of the BLM, the surface management agency (the Service in this case) may assume the responsibility for administration of locatable mineral entry and develop its own regulations.

This EIS will analyze the effects of the proposed action and its alternatives as they would be administered utilizing current BLM regulations and policies, regardless of which agency would actually administer the mineral entry. The Service has not developed locatable mineral entry regulations for the Range. For the purposes of this EIS, it is assumed that if the Service was to administer mineral entry and develop regulations, the regulations would be similar to the BLM regulations because they would be implementing the same laws. In addition, the State of Nevada and some local governments have laws and regulations that are consistent with Federal regulations and applicable to mineral entry operations on Federal lands.

The Federal regulations that apply to locatable mineral entry activities on all unreserved public domain, except for land in wilderness review, are stated in 43 CFR 3809. The stated objective of these regulations is to impose reasonable controls on mineral entry activities to prevent undue or unnecessary degradation, but not to prevent, or unduly hinder, mineral entry activities. For each alternative, the environmental consequences of mineral entry on those lands that would be open, but have not been proposed for wilderness, will be evaluated as regulated in 43 CFR 3809. The requirements of these regulations are summarized below.

The Federal regulations that apply to locatable mineral entry on lands within the BLM's Wilderness Review Program are stated in 43 CFR 3802. The stated objective of these regulations is to allow mineral entry activities on lands under wilderness review, but only in a manner that will not impair the suitability of the area for inclusion in the wilderness system. Although none of the Range is within the BLM's Wilderness Review Program because the Service is the surface managing agency, the lands within the Service's recommended wilderness areas are similar in nature. In fact, the Service's recommended wilderness areas have progressed beyond review or study status and have been recommended to Congress by the President. For each alternative, the environmental consequences of mineral entry on those lands that would be open and have also been recommended for wilderness will be evaluated as regulated in 43 CFR 3802. The requirements of these regulations are summarized below.

Appendix C contains a listing of Federal and State permit requirements for mining in Nevada (Nevada Bureau of Mines and Geology 1991). Those State permits that are pertinent to the wildlife and wilderness resources of the Range are listed below.

Summary of Federal surface protection and reclamation regulations and permit requirements for mineral entry on the Range:

A. Unreserved public domain - for land that has not been recommended for wilderness status. The surface management regulations (43 CFR 3809) recognize three levels of operation with increasing requirements:

1. Casual use by operator who does negligible disturbance and does not use mechanized earth-moving equipment or explosives. No notice or plan is required and the operator does not need to contact the administering agency before proceeding with mineral entry activities.

2. Surface disturbance of 5 acres or less is anticipated by the operator. A written notice must be submitted to the administering agency prior to starting operations. This notice must describe the operation, location, and access, and must contain a statement that the lands will be reclaimed to the standards spelled out in the regulations. The operator must notify the administering agency when reclamation is completed so an inspection can be made. No approval of the notice is required before proceeding.

3. Surface disturbance of more than 5 acres. A plan of operation must be submitted to the administering agency describing the entire operation, equipment to be used, location of access, support facilities, drill sites, measures to prevent undue degradation, and a reclamation plan. The administering agency must acknowledge receipt of the plan, and act within 30 days (or serve notice that an extension of up to 60 days is necessary). Reclamation and bonding are required for all operations, and the administering agency must approve the plan before the operator may proceed. In addition to preventing undue degradation, the plan must comply with the National Environmental Policy Act, National Historic Preservation Act, Endangered Species Act, Clean Air Act, and Federal Water Pollution Control Act before it will be approved by the regulating agency.

B. Land recommended for wilderness designation. (43 CFR 3802)

1. A plan of operation is not required when: (a) searching for and occasionally removing mineral samples or specimens; (b) operating motorized vehicles over open use areas and trails; (c) maintaining or making minor improvements to existing access routes or other facilities; and (d) making geological, radiometric, geochemical, geophysical, or other tests using instruments, devices, or drilling equipment that are transported without using mechanized earth-moving equipment or vehicles. As administered by BLM, surface disturbance must be "not substantially noticeable" and must not impair the wilderness character of the land.

2. **An approved plan of operations is required prior to commencing:** (a) mining operations that involve construction of means of access, or improving or maintaining such access facilities in a way that alters the alignment, size, and character of such facilities; (b) operating motorized vehicles over open use areas and trails; (c) mining operations using tracked or mechanized earth-moving equipment; (d) mining operations using motorized vehicles over an area that has been designated as "closed" to off-road vehicles, unless the use of a motorized vehicle can be covered by a special or temporary use permit; (e) construction or placing of any mobile, portable, or fixed structure on Range land for more than 30 days; (f) mining operations requiring the use of explosives; and (g) any operation that may cause changes in a water course.

The administering agency must approve all plans of operations before the operator may proceed, and reclamation and bonding are required for all operations. In addition to preventing undue degradation, the plan must comply with the Wilderness Act, National Environmental Policy Act, National Historic Preservation Act, Endangered Species Act, Clean Air Act, and Federal Water Pollution Control Act before it will be approved by the regulating agency.

As administered by BLM, Plans of Operation are not usually approved in Wilderness Study Areas until wilderness studies are complete and decisions are made for recommendations to Congress. For the purposes of this EIS, it is assumed that the surface management agency would not approve Plans of Operation in the areas proposed for wilderness on the Range until Congress has taken final action.

Summary of pertinent State permit requirements for mineral entry on the Range:

Numerous permits are required from the State of Nevada for developing, operating, and reclaiming mines (appendix C). Most pertinent to this EIS are permits for: Opening and Closing Mines, Appropriating the Public Waters, Constructing a Tailings Dam, Controlling Water Pollution, Mining Reclamation, Air Quality to Construct, Air Quality to Operate, Historic Preservation, Endangering Wildlife, etc.

Changes in Other Management Activities. The description of each alternative will include a brief summary of any changes that would be necessary in the Service's current management activities on the Range to accommodate the projected mineral exploration and development activities. The current resource management activities on the Range are expected to change very little as a result of the proposed mineral withdrawal or any of the alternatives. Descriptions of the alternatives will not include a discussion of resource management or availability on the portion of the Range overlaid by the Nellis Air Force Range because no change is proposed for this area under any of the alternatives.

ALTERNATIVE A:

Mineral Development Setting. Alternative A, Wildlife Range Withdrawal, is the proposed action. The portion of the Range that is set aside exclusively for the Wildlife Range (i.e., that part that is not secondarily withdrawn by Congress for military use) would be withdrawn from locatable mineral entry (figure 2-1, page 2-11). The withdrawal area encompasses approximately 311,500 hectares (770,000 acres), mostly in the eastern portion of the Range, plus a smaller parcel in the southwest corner. Under this alternative, the withdrawal area would continue to be closed to entry for exploration, claiming, and extraction of locatable minerals for an additional 20 years, starting in October 1993 and ending in 2013.

Changes in Other Management Activities. This alternative would maintain the current management and utilization of the Range for all resources. Desert bighorn sheep, the desert ecosystem, cultural resources, and restricted wildlife-related public use would continue to be the priority objectives of the Range. Also, pending final Congressional action, the recommended wilderness areas would be managed to protect identified wilderness values.

ALTERNATIVE B:

Mineral Development Setting. Under Alternative B, No Action (no withdrawal), the mineral estate on that part of the Range that is not secondarily withdrawn for military use would be open to entry for exploration, claiming, and extraction of locatable minerals, as provided for in the Mining Law of 1872, as amended, and the Federal Land Policy Act of 1976. The opening for mineral entry would be effective with the expiration of the current temporary segregation.

For this alternative it is assumed that the existing wilderness recommendation would remain in place for the first 8 years of the proposed withdrawal period. The Air Force would complete a mineral assessment on the "bombing range" portion of the Range by 1998 and thereby satisfy the remaining deficiency of the original wilderness recommendation. Congress would then take action within another 3 years (by 2001), and release the area from further wilderness consideration. The entire area proposed for withdrawal in Alternative A would be open to mineral entry without wilderness constraints (figure 2-2, page 2-12) for the last 12 years of the proposed withdrawal. Mineral entry would be constrained by the regulations in 43 CFR 3809 for the first 8 years and by the regulations in 43 CFR 3802 for the last 12 years.

For the purposes of analysis, the following mineral entry activities would be projected to take place under this alternative:

1. Claims and a Plan of Operations would be filed for a limestone mine at the former "June Bug" mine location shown by the Plan symbol on Gass Peak near the south-central boundary in figure 2-2 (page 2-12). The Plan of Operation would not be approved during the first 8 years, but would be approved when the Range was released from wilderness consideration. A mine would be developed and mining would take place during the last 12 years of the

proposed withdrawal. All pertinent local, State, and Federal permits would be applied for and approved. The site would eventually be reclaimed and the improvements removed, but reclamation would not include refilling the quarry. The following specifications on the mine are assumed and projected based on a similar mine in the Las Vegas vicinity.

-- Mineral exploration would consist primarily of drilling over a 6-month to 1-year period. Design and construction of a new plant and mining site would require about 50 employees for 2 years.

-- The mine and plant would process approximately 907,800 metric tons (1 million short tons) of limestone ore per year over a lifespan of 30 years. Production would be approximately 545,000 metric tons (600,000 short tons) per year of finished products including cement, redi-mixed concrete, and other lime products.

-- The developed area would cover a total of approximately 81 hectares (200 acres), including 53 hectares (130 acres) for the plant and 28 hectares (70 acres) for the quarry. The plant would require numerous large buildings including a smoke stack approximately 350 feet high with a strobe light for aircraft safety.

-- The existing road would be improved for all-weather use by heavy trucks and mine staff. Daily traffic would include roundtrip commuting for approximately 30 employees, and 55 to 60 roundtrip loads per day for trucks to haul finished product. There would also be daily traffic from the quarry to the plant by heavy haul trucks.

-- The plant would also require a 25-30 KV electrical supply and approximately 1,135 liters (300 gallons) per minute of water for processing. Water could come from a deep well on the site if adequate groundwater was available, or if not, it would be piped from a well off the Range or from the City of Las Vegas.

2. Claims would be filed at the former "Lake" mine location in the northeast Sheep Range (figure 2-2), and after the area was released from the wilderness recommendation, a Plan of Operations would be filed for surface disturbance of more than 5 acres. Surface disturbance would occur on approximately 5 acres, and although vehicular access would be permitted, no access improvements would be made. No production would occur, and the site would eventually be reclaimed and abandoned.

3. Claims and "Notices" would be filed for 22 other sites on the Range (figure 2-2). These sites are projected at the sites of mineral anomalies identified in the mineral assessment (Tingley et al. 1993). Surface disturbance would occur on less than 5 acres at each site, and reclamation would occur on most.

4. Casual prospecting (without mechanized equipment or explosives) would occur at numerous other unidentified sites throughout the portion of the Range proposed for withdrawal in Alternative A. Locations of prospecting would not be restricted, but most would be near open roads and in the areas

identified with high potential for minerals in figures 3-7, 3-8, and 3-9. Surface disturbance at these sites would be "negligible" as defined in CFR 43 3809, but the Service would have no prior notification or control over the sites selected.

5. A total of 25 linear miles of trails or roads would be established off the existing open roads for access to all the mineral entry activities projected in items 1 through 4 above. This would cover an estimated total of 18 hectares (45 acres) of land (25 linear miles x 15 feet wide).

Changes in Other Management Activities. This alternative would maintain the current management and utilization of the Range for all resources except minerals and off-road vehicle use. Desert bighorn sheep, the desert ecosystem, cultural resources, and restricted wildlife-related public use would continue to be the priority objectives of the Range. Vehicles would continue to be restricted to designated roads after wilderness considerations were removed, but exceptions would be necessary for mineral prospecting and development. An estimated total of 50 special use permits would be issued during the 20 year term of the proposed withdrawal. (Refer to item 5 in the mineral development setting for more information on off-road vehicle access.)

ALTERNATIVE C:

Mineral Development Setting. Under Alternative C, Limited Entry, all the area proposed for withdrawal in Alternative A, except the southern Las Vegas Mountain Range, would be withdrawn from entry for locatable minerals. For this EIS, the southern Las Vegas Mountain Range is defined as the area south of a line beginning at the entrance road to the Corn Creek Field Station, proceeding east along the Mormon Well Pass Road past the Field Station to the intersection with the Gass Peak Road, proceeding east along the Gass Peak Road to the intersection with the service road to Quail Spring, and proceeding due east to the Range boundary. Under Alternative C, the mineral estate on southern Las Vegas Mountain Range area would be open to entry for exploration, claiming, and extraction of locatable minerals as provided for in the General Mining Law of 1872, as amended, and the Federal Land Policy Act of 1976. The opening for mineral entry would be effective with the expiration of the current temporary segregation.

For this alternative it is assumed that the existing wilderness recommendation would remain in place for the first 8 years of the proposed withdrawal period. The Air Force would complete a mineral assessment on the "bombing range" portion of the Range by 1998 and thereby satisfy the remaining deficiency of the original wilderness recommendation. Congress would then take action, and release the area from further wilderness consideration by 2001. The entire 27,115-hectare (67,000-acre) southern Las Vegas Range area would be open to mineral entry without wilderness recommendation constraints (figure 2-3) for the last 12 years of the proposed withdrawal. Mineral entry would be constrained by the regulations in 43 CFR 3802 for the first 8 years and by the regulations in 43 CFR 3809 for the last 12 years.

For the purposes of analysis, the following mineral entry activities would be projected to take place under this alternative:

1. Claims and a Plan of Operations would be filed for a limestone mine at the former "June Bug" mine site shown by the Plan symbol near the south-central boundary in figure 2-3. The Plan of Operation would not be approved during the first 8 years, but would be approved when the Range was released from wilderness consideration. A mine would be developed and mining would take place during the last 12 years of the proposed withdrawal. All pertinent local, State, and Federal permits would be applied for and approved. The site would eventually be reclaimed and the improvements removed, but the quarry would not be refilled.

Specifications on the mine are assumed and projected based on a similar mine in the Las Vegas vicinity, and would be identical to the specifications listed for this mine under Alternative B.

2. Claims and "Notices" would be filed for 2 other sites in the southern Las Vegas Range area (figure 2-3). These sites are projected on the basis of anomalies identified in the mineral assessment (Tingley et al. 1993). Surface disturbance would occur on less than 5 acres at each site, and reclamation would occur on both.

3. Casual prospecting (without mechanized equipment or explosives) would occur at several other unidentified sites in the southern Las Vegas Range. Locations of prospecting would not be limited, but most would be in the more highly mineralized areas shown on figures 3-7, 3-8, and 3-9. Surface disturbance at these sites would be "negligible" as defined in CFR 43 3809, but the Service would have no prior notification or control over the sites selected.

4. A total of 5 linear miles of trails or roads would be established off the existing open roads for access to all the mineral entry activities projected in items 1 through 3 above. This would cover an estimated total of 4 hectares (9 acres) of land (5 linear miles x 15 feet wide).

Changes in Other Management Activities. This alternative would maintain the current management and utilization of the Range for all resources except minerals and off-road vehicle use. Desert bighorn sheep, the desert ecosystem, cultural resources, and restricted wildlife-related public use would continue to be the priority objectives of the Range. Vehicles would continue to be restricted to designated roads after wilderness considerations were removed, but exceptions would be necessary for mineral prospecting and development. An estimated total of 10 special use permits would be issued during the 20 year term of the proposed withdrawal. (Refer to item 4 in the mineral development setting for more information on off-road vehicle access.)

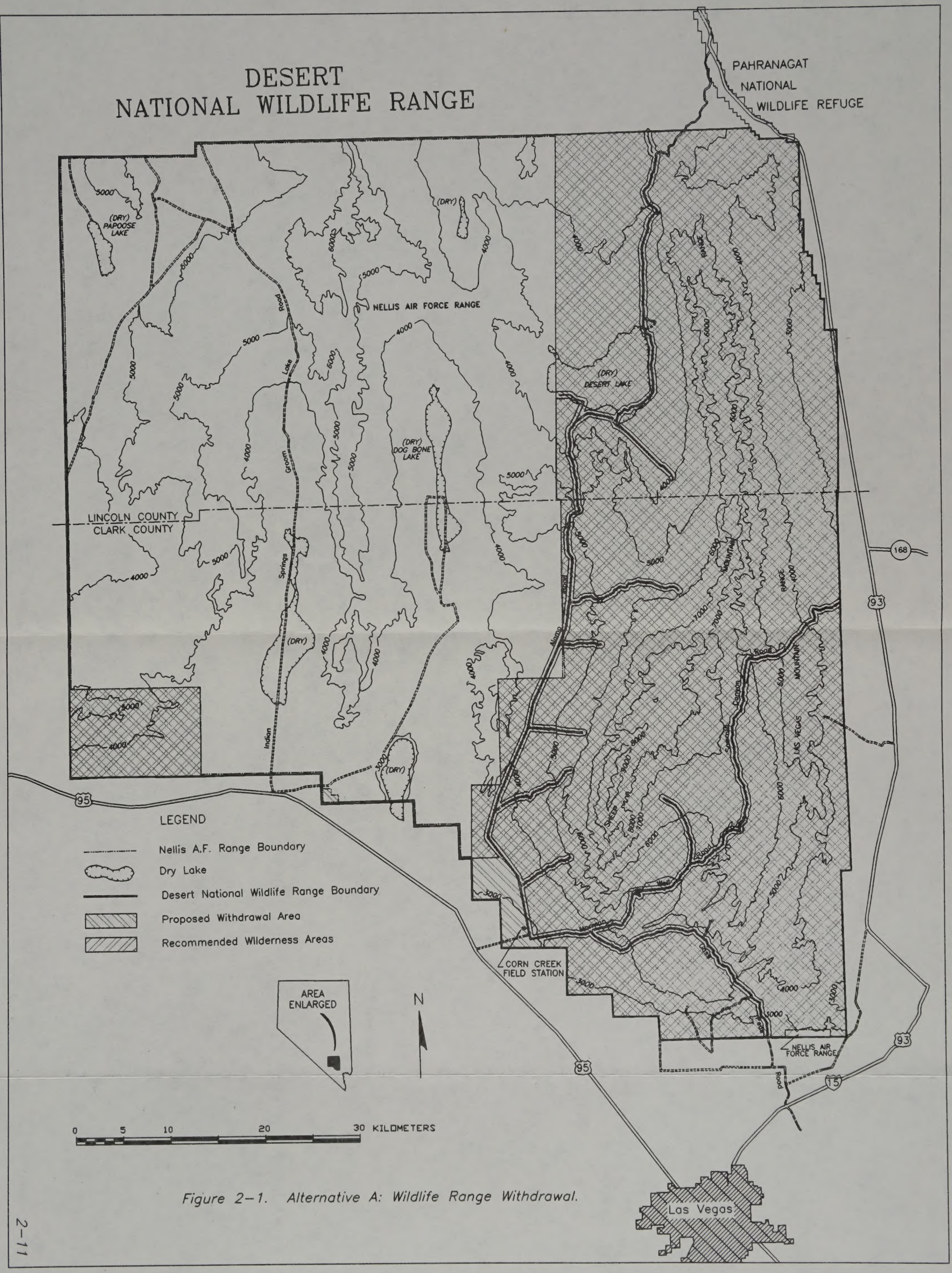

DESERT NATIONAL WILDLIFE RANGE
PAHRANAGAT NATIONAL WILDLIFE REFUGE
NELLIS AIR FORCE RANGE
(DRY) PAPOOSE LAKE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
(DRY)
LINCOLN COUNTY
CLARK COUNTY
Groom Lake Road
Indian Springs
Alamo Road
Mormon Well Road
Corn Creek Road
SHEEP RANGE
LAS VEGAS RANGE
MOUNTAIN
CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
Las Vegas
95
93
168
15
3000
4000
5000
6000
7000
8000
9000
LEGEND
Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
Proposed Withdrawal Area
Recommended Wilderness Areas
AREA ENLARGED
N
0
5
10
20
30 KILOMETERS

Figure 2-1. Alternative A: Wildlife Range Withdrawal.

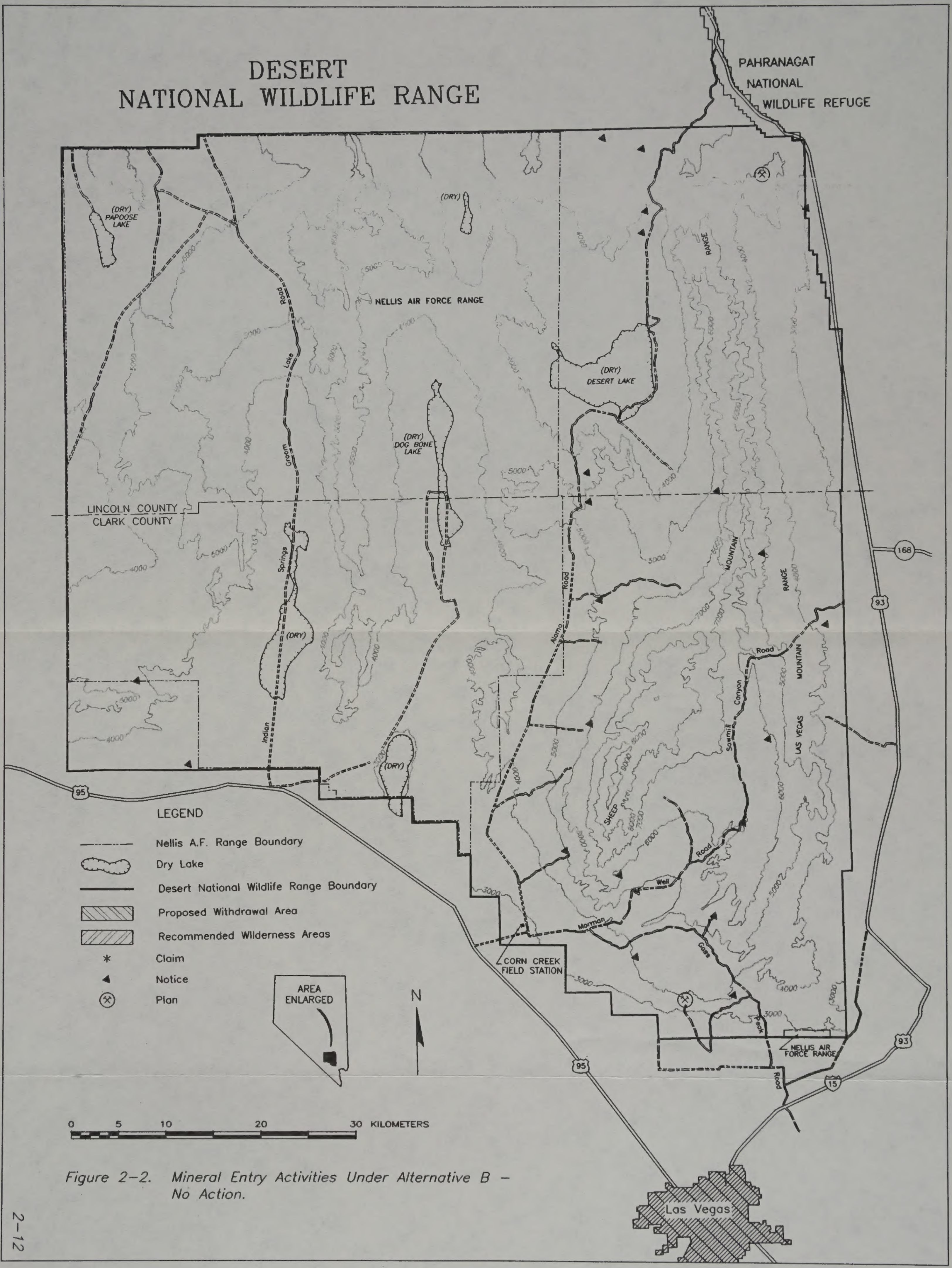

DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT NATIONAL WILDLIFE REFUGE
(DRY) PAPOOSE LAKE
(DRY)
NELLIS AIR FORCE RANGE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
Groom Lake Road
Indian Springs
LINCOLN COUNTY
CLARK COUNTY
(DRY)
(DRY)
Alamo Road
SHEEP RANGE
MOUNTAIN
RANGE
LAS VEGAS MOUNTAIN RANGE
Sawmill Canyon Road
Mormon Well Road
Gass Peak Road
CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
Las Vegas
95
93
168
15
4000
5000
6000
7000
8000
3000
LEGEND
—·— Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
▧ Proposed Withdrawal Area
▨ Recommended Wilderness Areas
* Claim
◀ Notice
⊗ Plan
AREA ENLARGED
N
0 5 10 20 30 KILOMETERS

Figure 2–2. Mineral Entry Activities Under Alternative B – No Action.

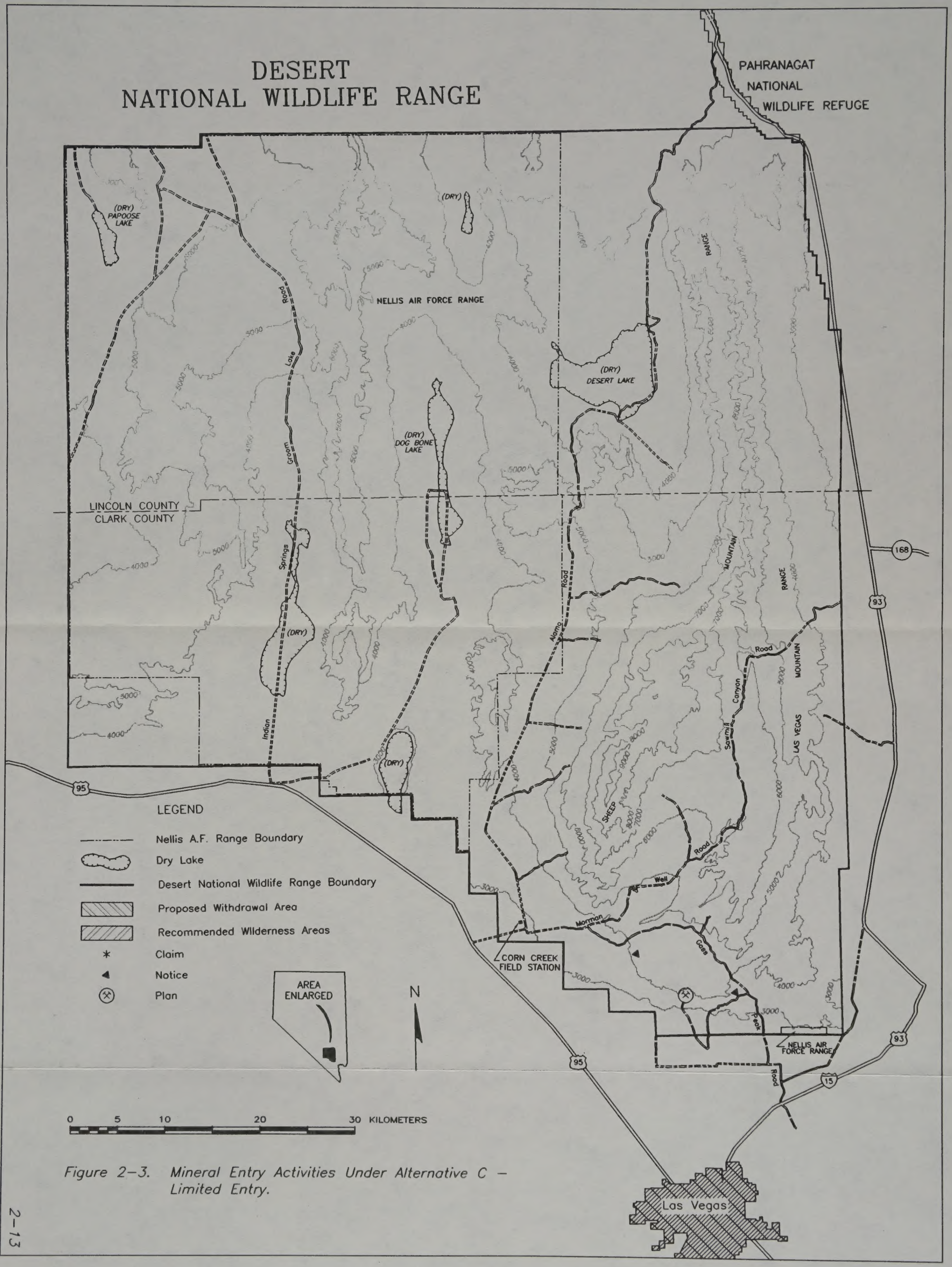

DESERT NATIONAL WILDLIFE RANGE
PAHRANAGAT NATIONAL WILDLIFE REFUGE
(DRY) PAPOOSE LAKE
(DRY)
NELLIS AIR FORCE RANGE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
Groom Lake Road
LINCOLN COUNTY
CLARK COUNTY
Indian Springs
(DRY)
Alamo Road
SHEEP RANGE
SHEEP MOUNTAIN RANGE
LAS VEGAS MOUNTAIN RANGE
Sawmill Canyon Road
Mormon Well Road
Gass Peak Road
CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
168
93
95
15
Las Vegas
LEGEND
Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
Proposed Withdrawal Area
Recommended Wilderness Areas
* Claim
Notice
Plan
AREA ENLARGED
N
0 5 10 20 30 KILOMETERS
3000
4000
5000
6000
7000
8000
9000

Figure 2–3. Mineral Entry Activities Under Alternative C – Limited Entry.

Table 2-1. Issue-oriented Comparison of Alternatives.

ISSUES	ALTERNATIVE A
IMPACTS TO MINERAL DEPOSITS	No impacts. Deposits would remain in place.
IMPACTS TO GROUND WATER AND SPRINGS	No impacts. Continued availability to wildlife.
IMPACTS TO DESERT BIGHORN SHEEP	Significant benefits. Optimum recovery of population.
IMPACTS TO DESERT TORTOISES	Significant benefits. Optimum contribution to recovery.
IMPACTS TO CANDIDATE T&E SPECIES	Significant benefits. Optimum contribution to recovery.
IMPACTS TO DESERT ECOSYSTEM AND BIOLOGICAL DIVERSITY	Significant benefits No loss of diversity or disruption of crucial relationships.
IMPACTS TO CULTURAL RESOURCES	No impacts. No inadvertent destruction of sites.
IMPACTS TO LOCAL AND REGIONAL ECONOMY	Opportunity foregone for insignificant increase to local economy.
IMPACTS TO WILDLIFE-RELATED RECREATION	No significant impacts. Minor benefit from protection of wildlife habitat.
IMPACTS TO VISUAL RESOURCES	No impacts. Continue unaffected.

ALTERNATIVE B	**ALTERNATIVE C**
Minor depletion of limestone deposits from mine.	Minor depletion of limestone deposits from mine.
Moderate potential for disruption of ground water flow and springs by prospecting.	Slight potential for degradation of springs.
Displacement of 50 sheep from seasonal range. Disruption of lambing. Delayed population recovery.	Displacement of 50 sheep from seasonal range. Delayed population recovery.
Loss of potential habitat for 14 desert tortoises.	Loss of potential habitat for 11 desert tortoises.
Potential loss of candidate plants and animals.	Potential loss of candidate plants and animals.
Habitat destroyed on 145 hectares. Displace wildlife from crucial springs.	Habitat destruction on 88 hectares. Displace wildlife from crucial habitat at springs.
High potential for irretrievable destruction of cultural sites.	Minor potential for inadvertent destruction of sites.
Minor benefit to local economy from limestone mine.	Minor benefit to local economy from limestone mine.
Significant loss of solitude and wildlife observation.	Minor loss of solitude and wildlife observation.
Significant degradation from limestone mine.	Significant degradation from limestone mine.

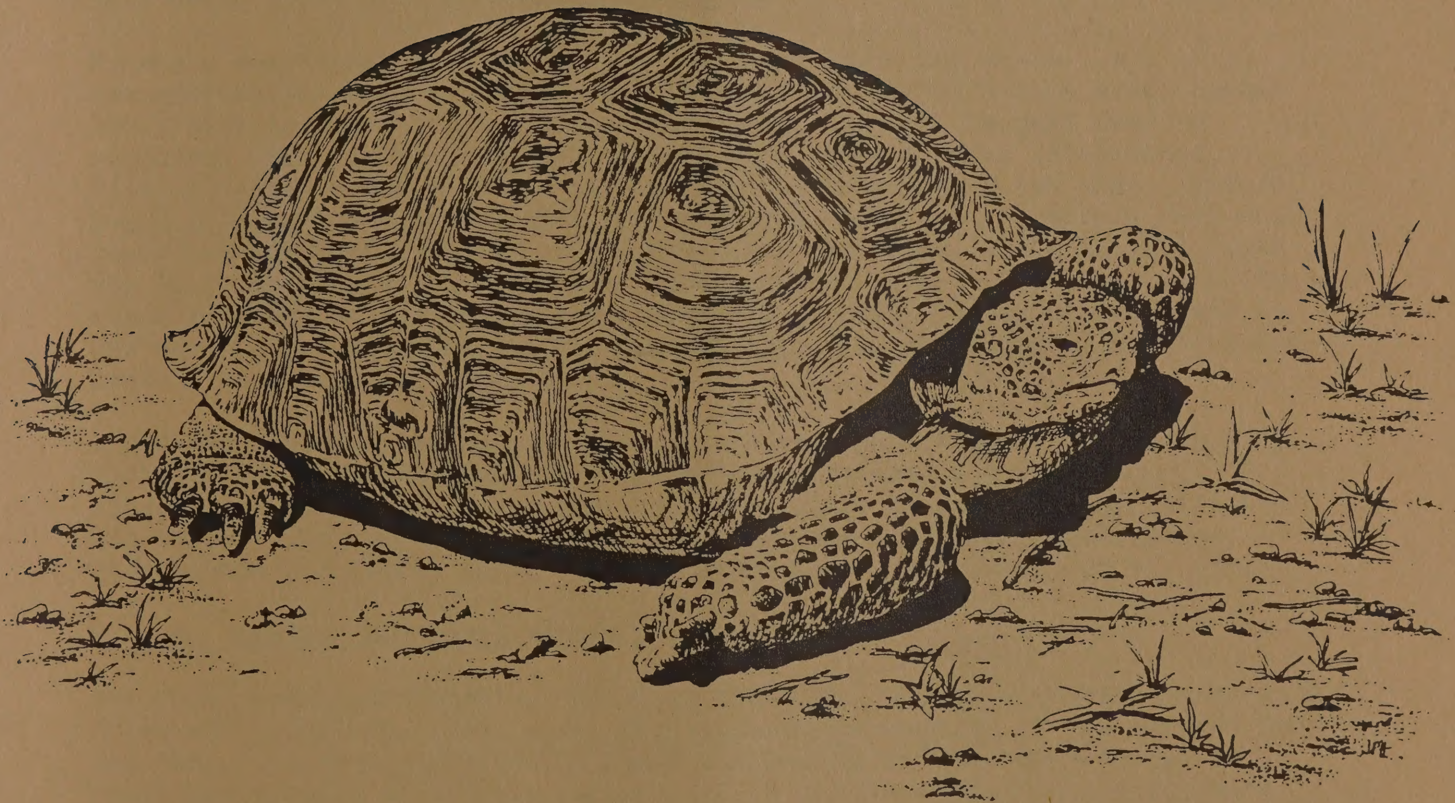
Table 2-2. Alternative comparison matrix.

ALTERNATIVES	A	B	C
CONSEQUENCES TO:			
Physical Factors			
Minerals	o	-	-
Water	o	--	-
Biological Factors			
Desert Bighorn Sheep	++	--	--
Desert Tortoises	++	--	--
Candidate T & E Species	++	--	--
Desert Ecosystem	++	--	--
Human Factors			
Cultural Resources	o	--	-
Economy	o	+	+
Wild.-Related Recreation	+	--	--
Visual Resources	o	--	--
OVERALL EFFECTS	++	--	--

-- = significant adverse impact
- = some adverse impact
o = neutral effect
+ = some benefit
++ = significant benefit

CHAPTER 3

AFFECTED ENVIRONMENT



CHAPTER THREE
3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter describes and discusses those factors of the existing environment or situation that may affect, or be affected by, any action or inaction associated with a withdrawal of, or exploration and mining for, locatable minerals on the Range. The general environmental setting of the Range is described first followed by a description of each environmental factor.

3.2 ENVIRONMENTAL SETTING

3.2.1 HISTORY

Native Americans have lived at what is now known as the Range for at least 12 thousand years. Most of the record of human history on the Range is written in stone, literally. Obsidian flakes, spear points, hearth rocks, caves, and petroglyphs are among the many and varied traces left by people who long ago made their homes on the Range.

European Americans have been present for only about 200 years. A transportation network, called the Old Spanish Trail or Mormon Road, opened about 1829 in and near what is now the Range. The trails were used by explorers, fur traders, miners, and settlers. The Mormons established a mission in Las Vegas in 1855. By 1860 prospectors combed the area. Cattle began grazing the Range by 1870. By 1900 the Alamo and the Mormon Well wagon roads linked central Nevada gold fields with Las Vegas, and eventually with the Salt Lake-Los Angeles Railroad. Corn Creek was one of several watering stops for freight wagons hauling lumber and supplies to the mining towns in the north. The 1906 Las Vegas-Tonapah Railroad passed within 2 miles of Corn Creek Station on the Range.

The Groom and Gass Peak mining districts were established by the early 1900s. The June Bug mine produced $38,000 worth of zinc-lead ore in 1917. Prospectors, cattlemen, poachers, and bootleggers roamed the area until the mid 1930s. Their shacks, corrals, and adits are scattered on the Range (Livingston and Pippen 1989; Williams and Orlins 1963; Kelly, et al. 1990).

3.2.2 DESERT NATIONAL WILDLIFE RANGE

The Range was established by Executive Order No. 7373 of President Franklin D. Roosevelt on May 20, 1936, under the joint administration of the Service and the BLM. The Range, originally named the Desert National Game Range, contained a total of 910,931 hectares (2.25 million acres) including lands both north and south of U.S. Highway 95. Public Land Order (PLO) 4079, issued on August 26, 1966 (31 F.R. 11547), and corrected on September 23, 1966 (31 F.R. 12564), revoked Executive Order 7373 and established the Desert National Wildlife Range under the sole administration of the Bureau of Sport Fisheries and Wildlife (now the Service). This PLO also deleted those lands generally southwest of U.S. Highway 95, leaving the approximately 642,660 hectares (1,588,000 acres) that now comprise the Range.

3.2.3 LOCATION

The Range is located in the northeastern region of the Mojave Desert in northwestern Clark County and southwestern Lincoln County in southern Nevada (figure 3-1). The southernmost boundary is approximately one kilometer (0.6 mile) from the northern city limits of metropolitan Las Vegas. Administrative offices for the Range are located in Las Vegas, and a field headquarters is maintained at Corn Creek Spring, 40 kilometers (25 miles) northwest of the northern edge of Las Vegas. Other notable features in the vicinity of Las Vegas and the Range include Hoover Dam and Lake Mead, the Toiyabe National Forest, and the Nevada Test Site.

3.2.4 OBJECTIVES AND MANAGEMENT

The Range was originally established for the protection, enhancement, and maintenance of wildlife, especially the Nelson's desert bighorn sheep[1]. Other approved purposes of the Range include conservation of biological diversity with special emphasis on endangered, threatened, and candidate threatened or endangered species; protection and maintenance of the integrity of the recommended wilderness areas; and protection and maintenance of cultural resources (USFWS 1989).

The Service's current management of the Range is mostly limited to custodial activities to be consistent with its purposes and objectives. Examples of bighorn habitat management activities include limited development and maintenance of water sources and fire suppression, when appropriate, in accordance with the Range's fire management plan. Bighorn population or herd management activities include conducting an annual aerial survey, estimating herd population and age and sex composition, issuing hunting permits, and law enforcement. Applied management research is permitted and encouraged if directed toward desert bighorns or other refuge objectives.

Wildlife-related public use and recreation activities are permitted with restrictions to protect biological, wilderness, and cultural resources. Camping, backpacking, hiking, horseback riding, and hunting for desert bighorns are permitted with restrictions. Vehicles are restricted to designated roads that are excluded from the wilderness recommendation; camping is not permitted within 1/4 mile or within sight of a wildlife water source; campers are required to provide their own water including for horses; and removal of artifacts, plant or animals (except legally taken bighorns) is prohibited. The Service maintains an interpretive kiosk and a self-guided interpretive trail at the Corn Creek Field Station. A 75-kilometer (47-mile) self-guided interpretive auto tour is also provided following the Mormon-Well Road.

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[1] To aid readability, common names are used for most animal species in the text. Species lists of vertebrate animals are included in Appendix B.

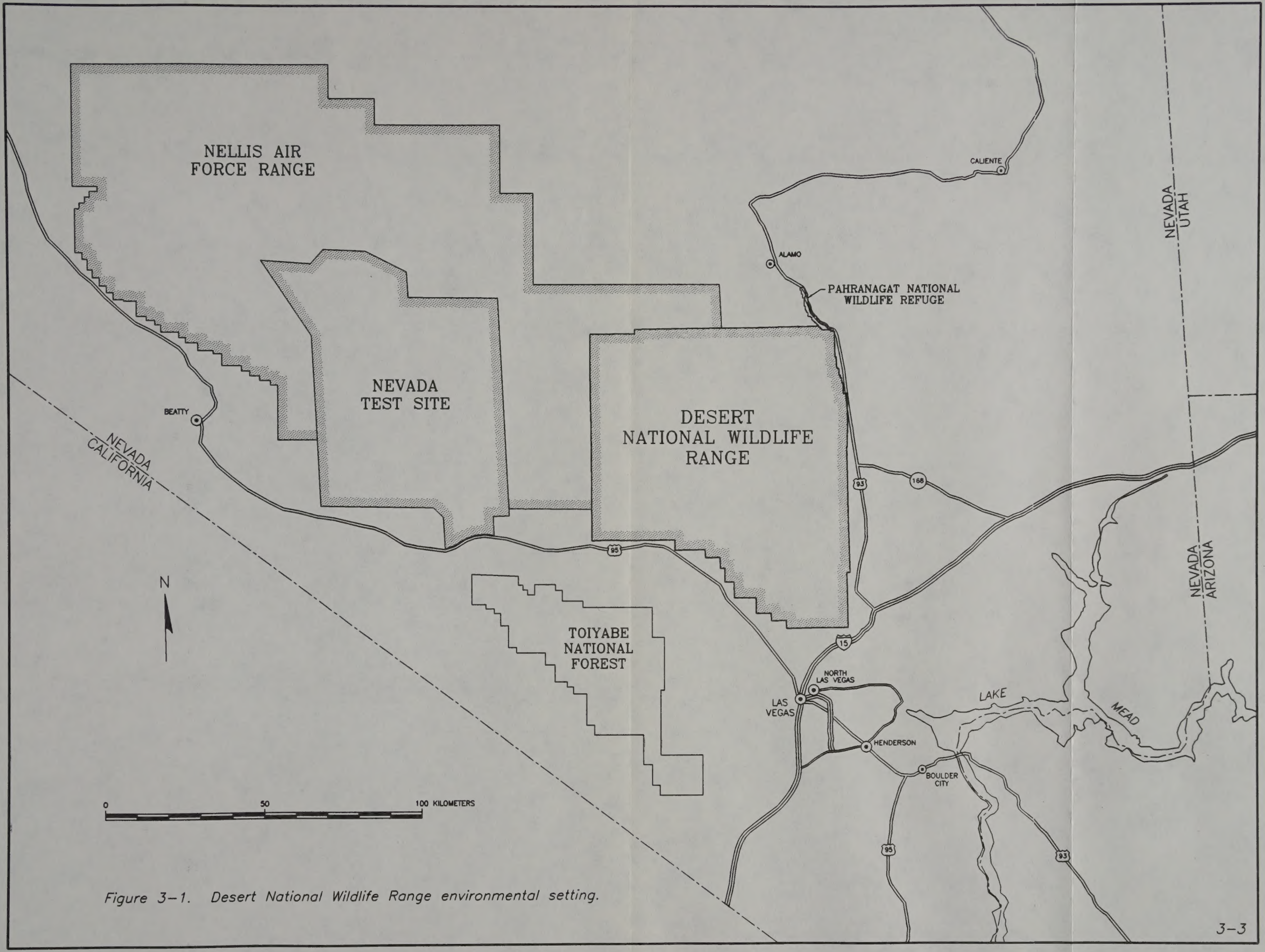

NELLIS AIR FORCE RANGE
NEVADA TEST SITE
DESERT NATIONAL WILDLIFE RANGE
TOIYABE NATIONAL FOREST
PAHRANAGAT NATIONAL WILDLIFE REFUGE
CALIENTE
ALAMO
BEATTY
NEVADA CALIFORNIA
NEVADA UTAH
NEVADA ARIZONA
93
168
95
15
NORTH LAS VEGAS
LAS VEGAS
HENDERSON
BOULDER CITY
95
93
LAKE
MEAD
N
0
50
100 KILOMETERS

Figure 3–1. Desert National Wildlife Range environmental setting.

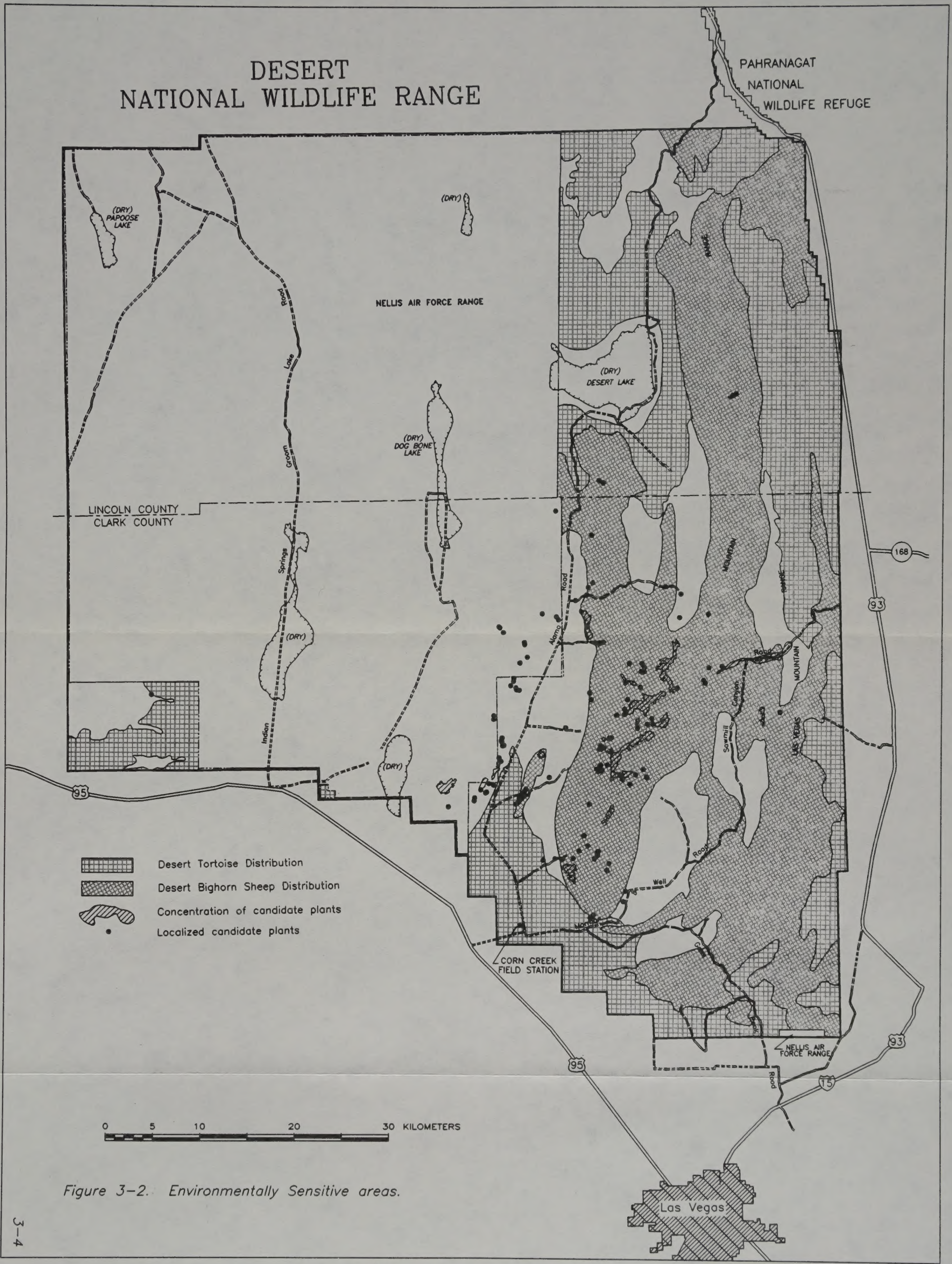

DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT
NATIONAL
WILDLIFE REFUGE
(DRY)
PAPOOSE
LAKE
(DRY)
NELLIS AIR FORCE RANGE
Groom Lake Road
(DRY)
DESERT LAKE
(DRY)
DOG BONE
LAKE
LINCOLN COUNTY
CLARK COUNTY
Indian Springs
(DRY)
(DRY)
Alamo Road
RANGE
MOUNTAIN
RANGE
SHEEP
MOUNTAIN
LAS VEGAS
Sawmill Canyon
Road
Well
Mormon
Road
168
93
95
95
93
15
CORN CREEK
FIELD STATION
NELLIS AIR
FORCE RANGE
Road
Las Vegas
Desert Tortoise Distribution
Desert Bighorn Sheep Distribution
Concentration of candidate plants
Localized candidate plants
0
5
10
20
30 KILOMETERS

Figure 3–2. Environmentally Sensitive areas.

In keeping with the National Wildlife Refuge System Administration Act of 1966 and programmatic plans for operation of the refuge system (USFWS 1976 and USFWS 1993), the Service considers all areas on the Range that support its primary purposes and objectives to be sensitive to incompatible activities. These sensitive areas include all cultural sites plus the important habitat areas of the desert bighorn sheep, desert tortoise, candidate threatened or endangered plants and animals, and wildlife in general where critical habitat is identified. By policy, these sites are considered inherently sensitive to incompatible uses regardless of whether they have been identified by a survey or not.

Figure 3-2 depicts the known use areas of desert bighorn sheep and desert tortoises and known locations of candidate plants. To avoid clutter, other sensitive areas such as the Sheep Mountain Archaeological District and use areas for candidate birds, mammals, and reptiles are not included on the map. However, if the known distributions of only two of the candidate animals (i.e., loggerhead shrike and chuckawalla) were overlaid on the map, it would be evident that the entire area proposed for withdrawal would be important for at least one primary use. Loggerhead shrikes use all the shrub and woodland vegetation communities of the Range at some time during their yearly movements, and chuckawallas use all the lower elevation rocky sites. In addition, the Sheep Mountain Archaeological District covers the northern 80percent of the proposed withdrawal area. Details on the areas that are sensitive because of importance for primary uses are provided in the description of the affected environment which follows.

3.2.5 MILITARY OVERLAY

Beginning in 1940 and continuing to the present, a military withdrawal has been superimposed on the western portion of the Range (figure 1-1). Public Law 99-606 (100 Stat. 3457), enacted November 6, 1986, and a Memorandum of Understanding (MOU) between the Secretaries of the Air Force and Interior, authorize the Air Force to use 340,032 hectares (839,880 acres) of the Range as an aerial bombing and gunnery range. The MOU, which is currently being renegotiated, and Public Law 99-606 will expire in 2001.

In the MOU, approximately 69,720 hectares (172,208 acres) or 20.5 percent of the bombing and gunnery range are designated as "impact zones for air to ground ordnance delivery" where ordnance may actually strike the ground. The balance of the military withdrawal permits control of air space with minimal impact to surface resources. Public access to the military withdrawal is highly restricted.

3.2.6 WILDERNESS RECOMMENDATION

The Wilderness Act of September 3, 1964 (Public Law 88-577, 16 U.S.C. 1331-1340), required the Secretary of the Interior to review all roadless areas of 5,000 contiguous acres (2023.5 hectares) or more for suitability for preservation as wilderness. A comprehensive study of the wilderness values of the Range was completed between 1966 and 1971 with a final study report being prepared in 1971. A total of 539,425 hectares (1,332,900 acres) of the Range were found to qualify for protection as part of the National Wilderness Preservation System. The remaining 103,240 hectares (255,100 acres) of the Range were not considered suitable as wilderness because of buildings, military target zones, and permanent roads and trails. Following public hearings in 1971 and completion of an EIS in 1975 (USFWS 1975), a wilderness recommendation was approved by the President and submitted to Congress. The recommendation was tabled indefinitely by Congress until a suitable mineral inventory is completed.

That portion of the wilderness proposal that is within the proposed mineral withdrawal area is approximately 306,500 hectares (759,000 acres) (figure 3-3). That portion of the Range not suitable for wilderness that is within the proposed mineral withdrawal area is approximately 5,000 hectares (11,000 acres). The mineral assessment that was completed for this withdrawal application will be sufficient to meet the need for the wilderness recommendation on the portion of the Range that is proposed for withdrawal.

The Air Force also has plans to complete a mineral inventory of the remainder of the Range prior to 1998 as part of its obligations under Public Law 99-606.

When a mineral inventory of the entire Range is available, Congress will have the information required to complete their consideration of the Wilderness Recommendation. It is not possible to project a date when Congress will complete action on the Wilderness Recommendation. Pending final Congressional action, the recommended wilderness areas are being managed to protect the wilderness values identified in the proposal. Refuge regulations that are in place to protect wilderness values include restricting vehicles to designated roads (that are excluded from the recommended wilderness areas), and restricting rock or mineral collecting to materials that are exposed and collectable without tools.

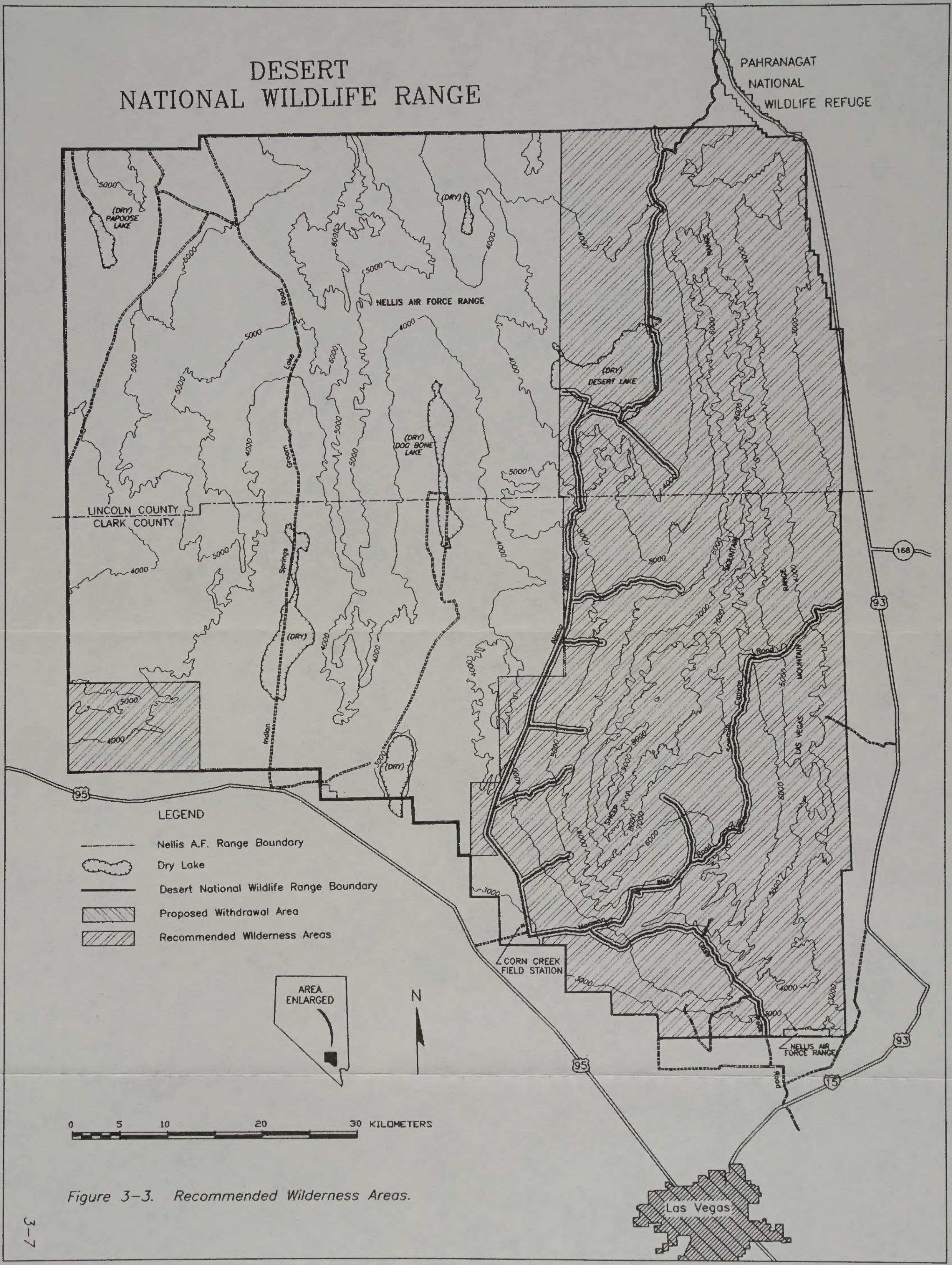
3.3 PHYSICAL FACTORS

3.3.1 CLIMATE

Long term meteorological data for Clark County are available from the National Climatic Data Center (1990). Generalized environmental conditions for the project area are based on Clark County data.

The climate of the project area is classified as desert and characterized by bright sunshine, low annual precipitation and relative humidity, and large ranges of daily temperature (Ruffner 1985). Prevailing westerly winds move warm moist Pacific air up the western slopes of the Sierra Nevada Range where the air cools, condenses, and falls as precipitation mostly in California. The air is warmed and dried as it descends the eastern slopes and very little precipitation falls. The result is that the lowlands of Nevada are largely desert or sagebrush steppe.

Weather Patterns. The average annual precipitation of 10.64 centimeters (4.19 inches) falls relatively uniformly throughout the year with peaks occurring in January and August (National Climatic Data Center 1990). Almost all


DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT
NATIONAL
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(DRY) PAPOOSE LAKE
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NELLIS AIR FORCE RANGE
(DRY) DESERT LAKE
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LINCOLN COUNTY
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Sawmill Canyon Road
SHEEP RANGE
SHEEP MOUNTAIN
LAS VEGAS RANGE
LAS VEGAS MOUNTAIN
CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
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LEGEND
Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
Proposed Withdrawal Area
Recommended Wilderness Areas
AREA ENLARGED
N
0
5
10
20
30 KILOMETERS

Figure 3–3. Recommended Wilderness Areas.

precipitation on the Range is rain except for the higher elevations of the Sheep Mountain Range where winter snowfall is common. Las Vegas averages 23 days per year with precipitation of 0.025 centimeters (0.01 inches) or more. Infrequent severe storms produce 5.08 to 10.16 centimeters (2 to 4 inches) of rain, flash floods, straight-line winds of 88.52 to 120.70 kilometers (55-75 miles) per hour, hail, and in very rare cases, tornadoes. Severe storms occur most frequently during July and August (Montgomery Engineers 1986).

Highest maximum mean temperatures (25.78 degrees C (104 degrees F)) occur in July, and lowest minimum mean temperatures (-13.67 degrees C (33 degrees F)) occur in January. Winds are generally under 5 kilometers (3 miles) per hour in early morning, but increase in the afternoon as the ground warms. Wind speeds are higher in the summer since the ground temperature increases more during the day. The Las Vegas area occasionally experiences strong winds from large-scale weather patterns or localized thunderstorm activity. Dust or sand storms occasionally occur during periods of high winds. Stable atmospheric conditions are characteristic year around in the Las Vegas Valley. Inversions occur frequently, at any time of day during the winter season and in the mornings in other seasons. However, little of this affects the Range because of the distance to emission sources and because prevailing winds transport emissions away. Also, higher elevations of the Range have better air circulation because of unstable conditions and fewer inversions.

3.3.2 AIR QUALITY

Data and Standards. Air quality data are available from the Clark County Health District Air Pollution Control Division (APCD) and the U.S. Environmental Protection Agency (EPA). Establishment of ambient air quality standards in Clark County is the responsibility of the EPA, the State of Nevada, and the Clark County Health District. The Clark County Health District maintains a regional emissions inventory by source category and specific major sources of criteria pollutants within Clark County.

Figure 3-4 shows the portion of the Range that is inside the Las Vegas Valley airshed. The boundaries of the airshed are marked by watershed boundaries since the ridges and peaks that inhibit air passage are also barriers to water flow.

Data were not available from the EPA on Lincoln County. Since it has little heavy industry, a small airport, and a low population, Lincoln County does not monitor air quality or maintain an office concerned with air issues (Setzer 1992). Ambient air quality standards remain the responsibility of the EPA and the State of Nevada.

Compliance. Air monitoring in Las Vegas shows violations of two criteria pollutants--carbon monoxide (CO), and particulate matter with a diameter equal to or less than 10 microns (PM10). All other standards are met. Air within the Las Vegas Valley airshed portion of the Range can be considered to have more pollutants than air within other portions. However, pollutants are rarely transported to the Range from Las Vegas since the prevailing winds are from the southwest and the Range is located directly north.

Carbon monoxide (CO) is a colorless, odorless gas that can pose a health risk during air inversions. The entire Las Vegas airshed is considered to be in nonattainment for CO, even though testing is primarily done in Las Vegas. However, portions of the airshed that include the Range are more likely to be in compliance (Quinn 1992).

PM10 is composed of extremely small suspended particulate matter such as dust and soot. Its microscopic size allows PM10 to be inhaled deeply into the lungs, causing it to be linked to lung damage and respiratory illnesses. In the Las Vegas Valley, about 40 percent of the PM10 comes from naturally occurring background sources and about 30 percent comes from motor vehicles and wood burning (Lee 1992).

PM10 violations occur in the Las Vegas airshed for both the 24 hour standard and the annual mean. The airshed has not been fully in attainment for any year since data collection started in 1985, and Clark County treats the entire valley as if it were not in attainment. Any activities expected to increase fugitive dust or combustion particulate emissions are considered potentially significant to the area's ambient air quality. The portion of the Range that shares this airshed is included in these concerns, even though it is at the far edges of the effects of human activity. Data are not available on PM10 levels on the Range outside of the Las Vegas Valley airshed.

Effects of the Nevada Test Site on Air Quality. The Range is due east of the Nevada Test Site where three underground nuclear tests were conducted in 1991. U.S. Department of Energy (DOE) studies indicate that in 1991 the EPA detected no off-site airborne radioactivity above background levels related to current nuclear testing at the Nevada Test Site. EPA maintains an Air Surveillance Network which includes 33 continuously operating sampling locations surrounding the Test Site and 76 standby stations in all states west of the Mississippi River. None of the monitoring sites are on the Range, but many are nearby.

3.3.3 GEOLOGY

The physiographic setting, geologic setting, and mining history and production sections which follow were excerpted from the final report of a recent mineral assessment of the Range (Tingley et al. 1993). Further details are available in the report.

Physiographic Setting. The Range is situated in the southern part of the Great Basin region of the Basin and Range physiographic province. This region is characterized by a series of generally north-trending mountain ranges separated by wide, alluvium filled valleys (figure 3-5). The proposed withdrawal area contains portions of the Spotted Mountains, Desert Mountains, East Desert Mountains, Sheep Mountains, and Las Vegas Mountains. The southern end of the Pahranagat and East Pahranagat Mountains also extend into the area.

Elevations range from about 746 meters (2,450 feet) at the margin of Las Vegas Valley on the southern boundary of the Range to 3,021 meters (9,912 feet) at the top of Hayford Peak in the central Sheep Mountains. The Sheep Mountains

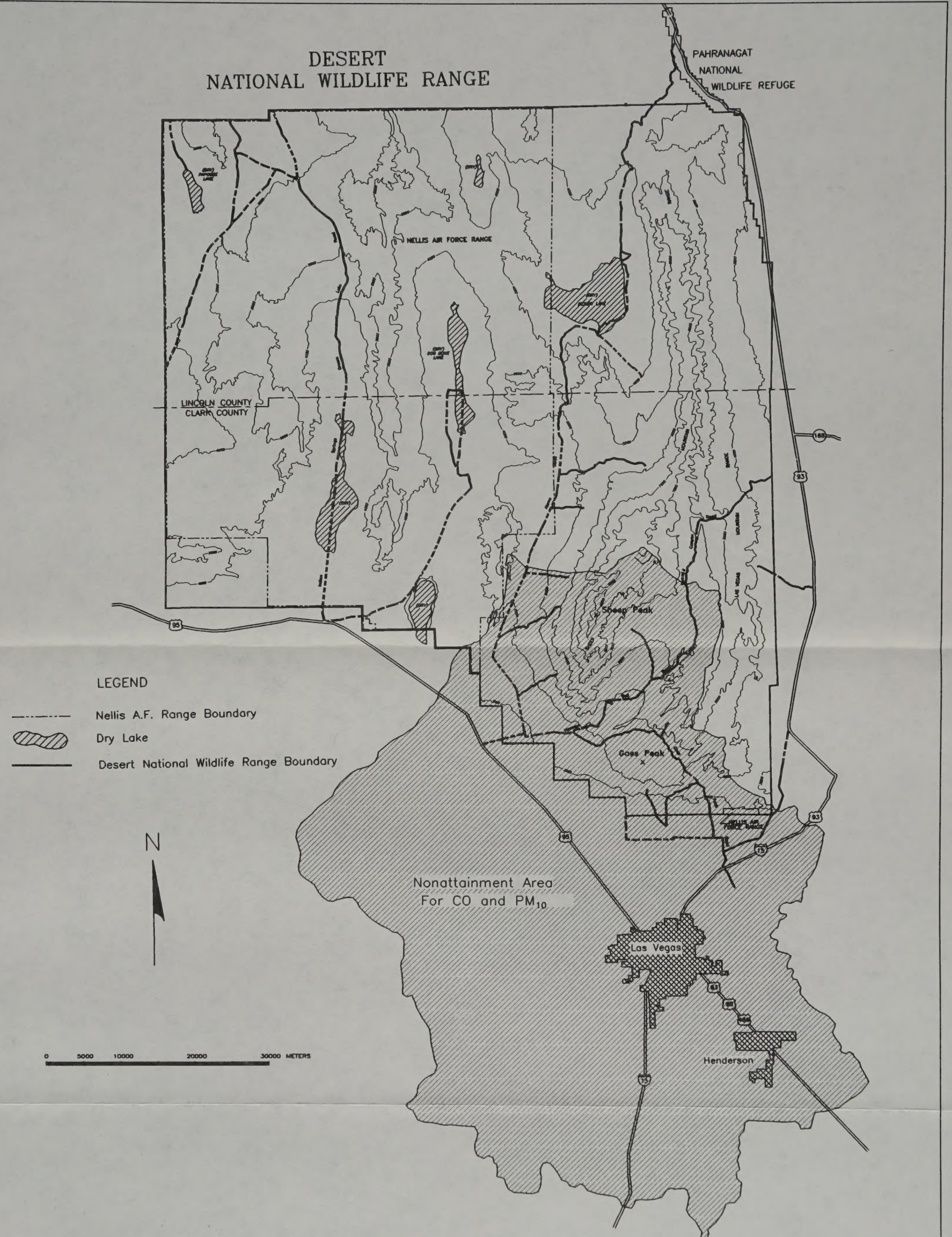

DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT
NATIONAL
WILDLIFE REFUGE
NELLIS AIR FORCE RANGE
LINCOLN COUNTY
CLARK COUNTY
168
93
95
15
Sheep Peak
Gass Peak
LEGEND
Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
N
Nonattainment Area
For CO and PM10
Las Vegas
Henderson
0
5000
10000
20000
30000 METERS

Figure 3–4. Las Vegas Valley Airshed.

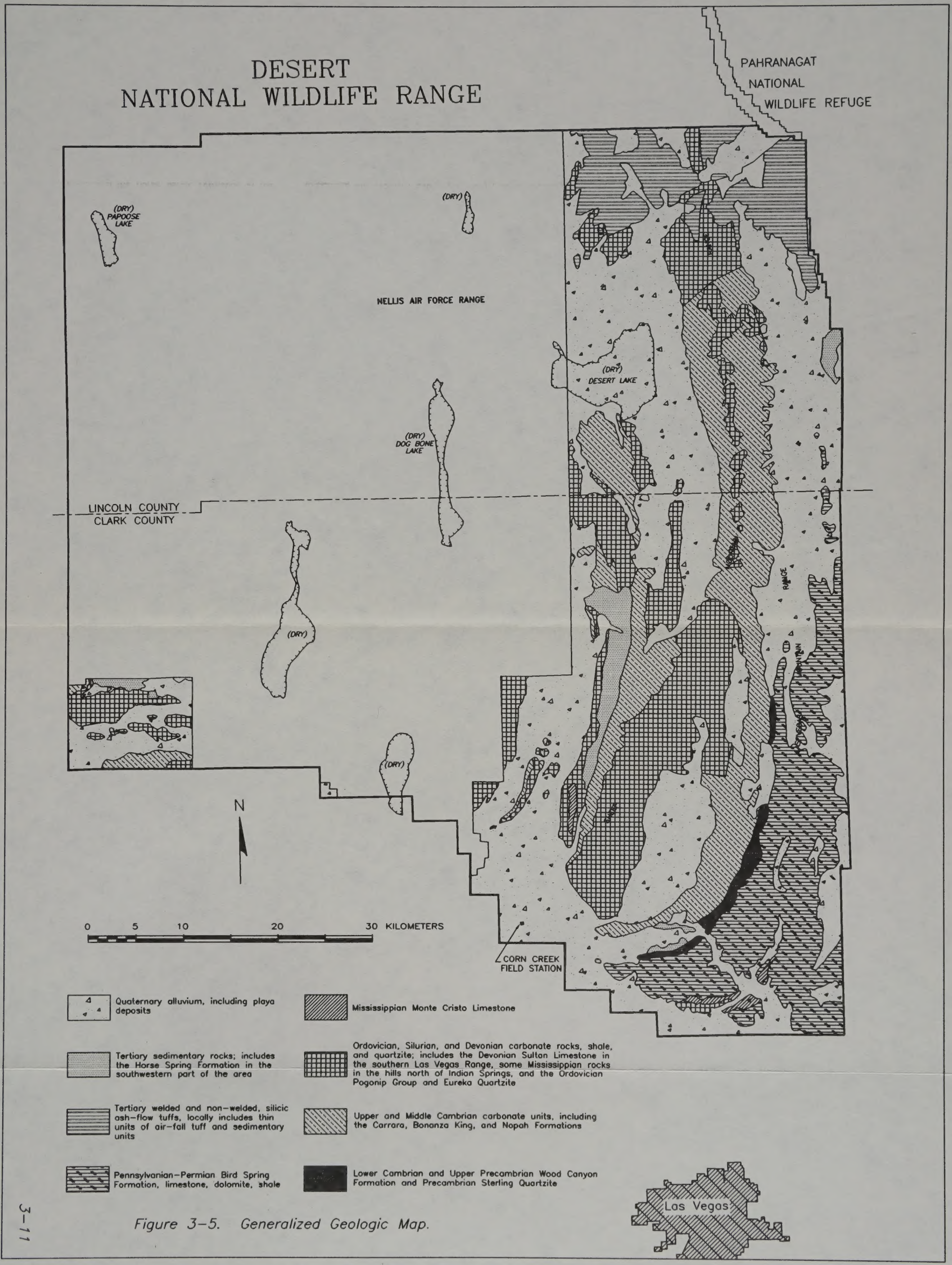

DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT
NATIONAL
WILDLIFE REFUGE
(DRY) PAPOOSE LAKE
(DRY)
NELLIS AIR FORCE RANGE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
LINCOLN COUNTY
CLARK COUNTY
(DRY)
(DRY)
RANGE
N
0 5 10 20 30 KILOMETERS
CORN CREEK FIELD STATION
Quaternary alluvium, including playa deposits
Mississippian Monte Cristo Limestone
Tertiary sedimentary rocks; includes the Horse Spring Formation in the southwestern part of the area
Ordovician, Silurian, and Devonian carbonate rocks, shale, and quartzite; includes the Devonian Sultan Limestone in the southern Las Vegas Range, some Mississippian rocks in the hills north of Indian Springs, and the Ordovician Pogonip Group and Eureka Quartzite
Tertiary welded and non-welded, silicic ash-flow tuffs, locally includes thin units of air-fall tuff and sedimentary units
Upper and Middle Cambrian carbonate units, including the Carrara, Bonanza King, and Nopah Formations
Pennsylvanian-Permian Bird Spring Formation, limestone, dolomite, shale
Lower Cambrian and Upper Precambrian Wood Canyon Formation and Precambrian Sterling Quartzite
Las Vegas

Figure 3–5. Generalized Geologic Map.

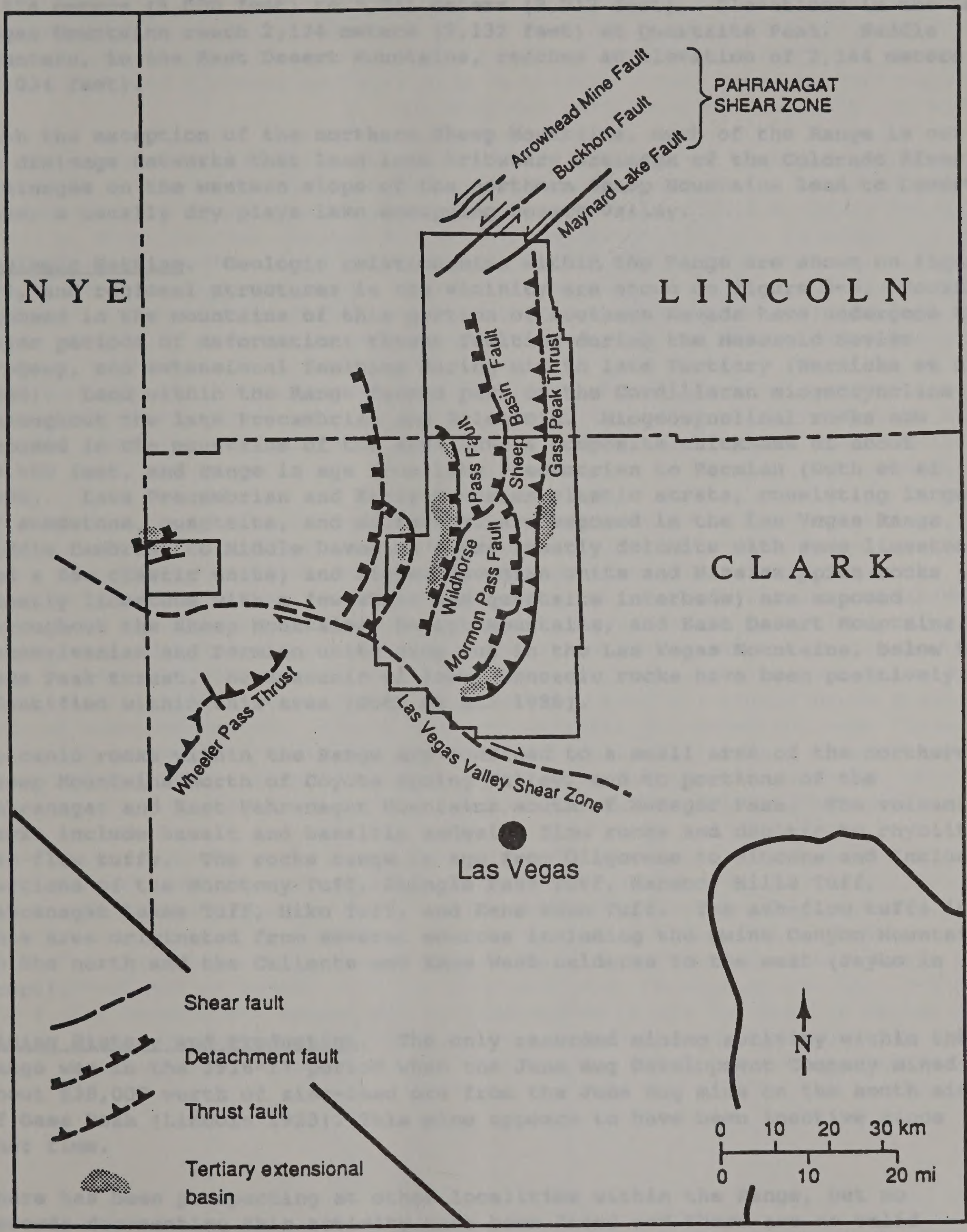

Arrowhead Mine Fault
Buckhorn Fault
Maynard Lake Fault
PAHRANAGAT SHEAR ZONE
NYE
LINCOLN
CLARK
Sheep Basin Fault
Gass Peak Thrust
Pass Fault
Wildhorse Pass Fault
Mormon Pass Fault
Wheeler Pass Thrust
Las Vegas Valley Shear Zone
Las Vegas
N
0 10 20 30 km
0 10 20 mi
Shear fault
Detachment fault
Thrust fault
Tertiary extensional basin

FIGURE 3–6. Regional structures in the vicinity of the Desert National Wildlife Range study area, Clark and Lincoln Counties, Nevada. Modified from Stewart and Carlson, 1978; Tschanz and Pampeyan, 1970; Guth, 1990; and Guth and others, 1988.

display the maximum topographic relief within the area, extending from about 1,524 meters (5,000 feet) to 3,021 meters (9,912 feet). Elevations in the Las Vegas Mountains reach 2,174 meters (7,132 feet) at Quartzite Peak. Saddle Mountain, in the East Desert Mountains, reaches an elevation of 2,144 meters (7,034 feet).

With the exception of the northern Sheep Mountains, much of the Range is cut by drainage networks that lead into tributary drainage of the Colorado River. Drainages on the western slope of the northern Sheep Mountains lead to Desert Lake, a usually dry playa lake occupying Desert Valley.

Geologic Setting. Geologic relationships within the Range are shown on figure 3-5, and regional structures in the vicinity are shown on figure 3-6. Rocks exposed in the mountains of this portion of southern Nevada have undergone two major periods of deformation: thrust faulting during the Mesozoic Sevier orogeny, and extensional faulting during mid to late Tertiary (Wernicke et al. 1984). Land within the Range formed part of the Cordilleran miogeosyncline throughout the late Precambrian and Paleozoic. Miogeosynclinal rocks now exposed in the mountains of the area have a composite thickness of about 29,500 feet, and range in age from late Precambrian to Permian (Guth et al. 1988). Late Precambrian and Early Cambrian clastic strata, consisting largely of sandstone, quartzite, and siltstone, are exposed in the Las Vegas Range. Middle Cambrian to Middle Devonian rocks (mostly dolomite with some limestone and a few clastic units) and higher Devonian units and Mississippian rocks (mostly limestone with a few shale and quartzite interbeds) are exposed throughout the Sheep Mountains, Desert Mountains, and East Desert Mountains. Pennsylvanian and Permian units crop out in the Las Vegas Mountains, below the Gass Peak thrust. No Mesozoic or lower Cenozoic rocks have been positively identified within this area (Guth et al. 1988).

Volcanic rocks within the Range are confined to a small area of the northern Sheep Mountains north of Coyote Spring Valley, and to portions of the Pahranagat and East Pahranagat Mountains south of Medsger Pass. The volcanic rocks include basalt and basaltic andesite flow rocks and dacitic to rhyolitic ash-flow tuffs. The rocks range in age from Oligocene to Miocene and include portions of the Monotony Tuff, Shingle Pass Tuff, Harmony Hills Tuff, Pahranagat Lakes Tuff, Hiko Tuff, and Kane Wash Tuff. The ash-flow tuffs in this area originated from several sources including the Quinn Canyon Mountains to the north and the Caliente and Kane Wash calderas to the east (Jayko in prep.).

Mining History and Production. The only recorded mining activity within the Range was in the 1916-17 period when the June Bug Development Company mined about $38,000 worth of zinc-lead ore from the June Bug mine on the south side of Gass Peak (Lincoln 1923). This mine appears to have been inactive since that time.

There has been prospecting at other localities within the Range, but no records documenting this activity have been found and there are no valid claims on record. The Lake mine, in the northern Sheep Mountains southwest of Pahranagat Lake, was located in 1899 but it never developed beyond a single prospect hole. Evidence of prospecting was found on the north side of Quartzite Hill, east of Quail Spring, and the property may have produced small amounts of lead ore. The most recent signs of mining activity were found at Wildhorse Pass, where a steel-pipe headframe still stands above a 50-foot-deep inclined shaft. Mining at this site was probably done in the 1950s or 1960s, but no production was recorded.

Mineral Assessment. In January 1992 the Service contracted with the Nevada Bureau of Mines and Geology to assess the mineral resource potential of the proposed withdrawal area of the Range. The assessment covered approximately 311,500 hectares (770,000 acres), mostly in the eastern section, that is not secondarily withdrawn for the Nellis South Bombing Range. The final report on this assessment, entitled *Energy and Mineral Resource Assessment of the Desert National Wildlife Range, Eastern Section, Clark and Lincoln Counties, Nevada* (Tingley et al. 1993), was received by the Service on January 12, 1993.

Because of its extensive length, the final mineral report is not appended to this EIS. It will be permanently available for review at the Desert National Wildlife Range headquarters in Las Vegas and at the BLM's Nevada State Office in Reno.

The assessment program consisted of a review of available data on geologic setting, metallic and industrial minerals, uranium, geothermal resources, and oil and gas resources of the Range. Remote sensing studies were done to provide an overview of lineation patterns and to outline areas of spectral response indicative of rock alteration and possible mineralization. A geochemical characterization and sampling program was completed to determine background chemical characteristics of unaltered rocks. Each mine and prospect found within the area was examined, and samples of mineralized material were collected and analyzed for 48 elements. Stream sediment samples were collected from 216 sites selected to evaluate areas outlined by the geologic; remote sensing; and mine, prospect, and outcrop sampling programs. The stream sediment samples were also analyzed for 48 elements.

No identified mineral resources that are considered to be commercially exploitable at the present time were found to be present within the study area. Examination of data collected during the assessment program did, however, define areas with potential for the discovery of mineral resources. The areas with potential for locatable minerals are shown on figures 3-7, 3-8, and 3-9, and are summarized in tables 3-1, and 3-2. Refer to the footnotes for tables 3-2 and 3-3 for an explanation of the legend for figures 3-7, 3-8, and 3-9. Industrial minerals such as high calcium limestone and cement limestone are considered the most likely to have economic development potential.

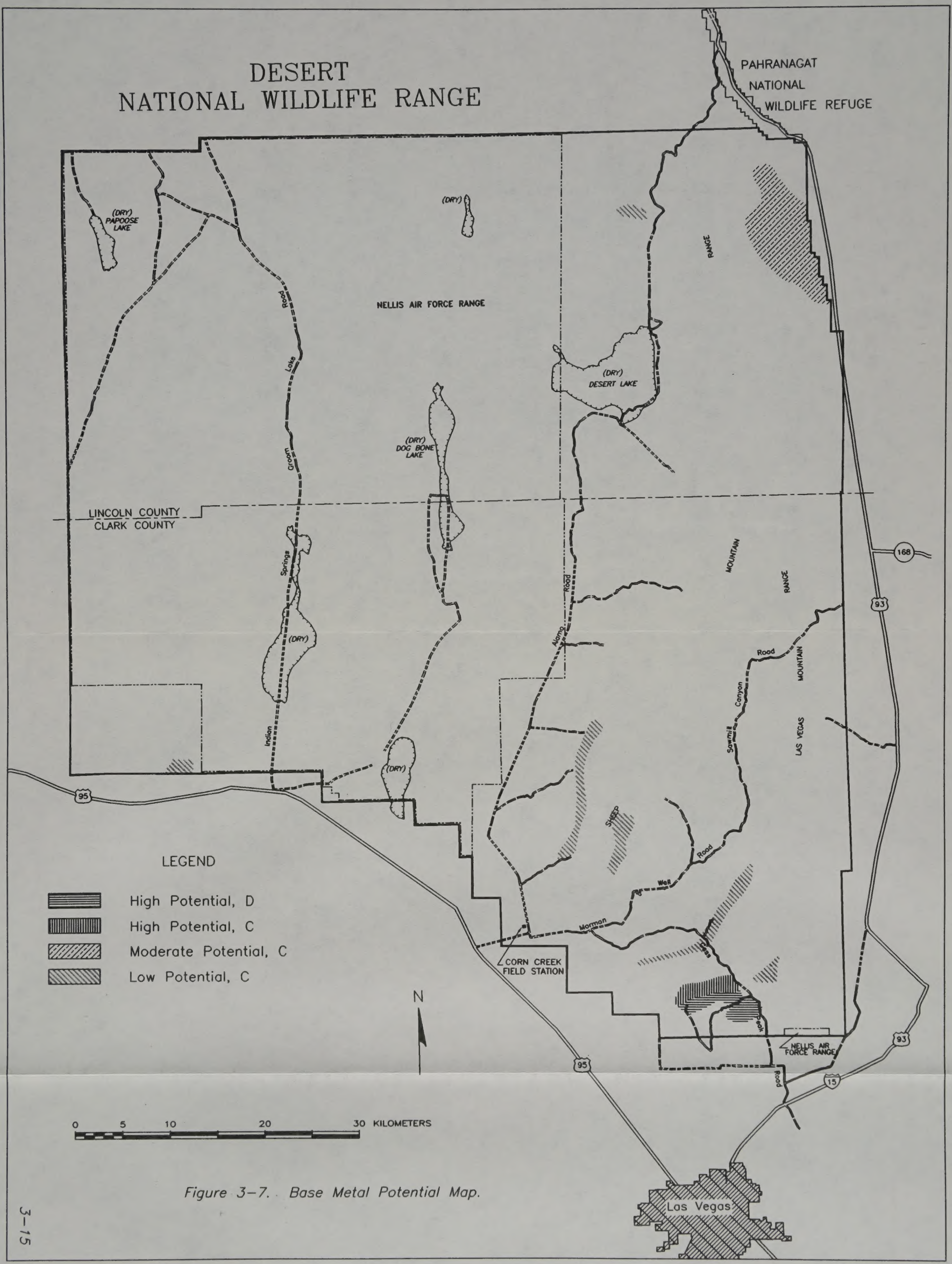

DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT
NATIONAL
WILDLIFE REFUGE
(DRY) PAPOOSE LAKE
(DRY)
NELLIS AIR FORCE RANGE
RANGE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
Groom Lake Road
LINCOLN COUNTY
CLARK COUNTY
Indian Springs
(DRY)
(DRY)
Alamo Road
MOUNTAIN
RANGE
168
93
Road
Canyon
Sawmill
MOUNTAIN
LAS VEGAS
SHEEP
Road
Well
Mormon
95
CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
Road
15
93
95
LEGEND
High Potential, D
High Potential, C
Moderate Potential, C
Low Potential, C
N
0 5 10 20 30 KILOMETERS
Las Vegas

Figure 3–7. Base Metal Potential Map.

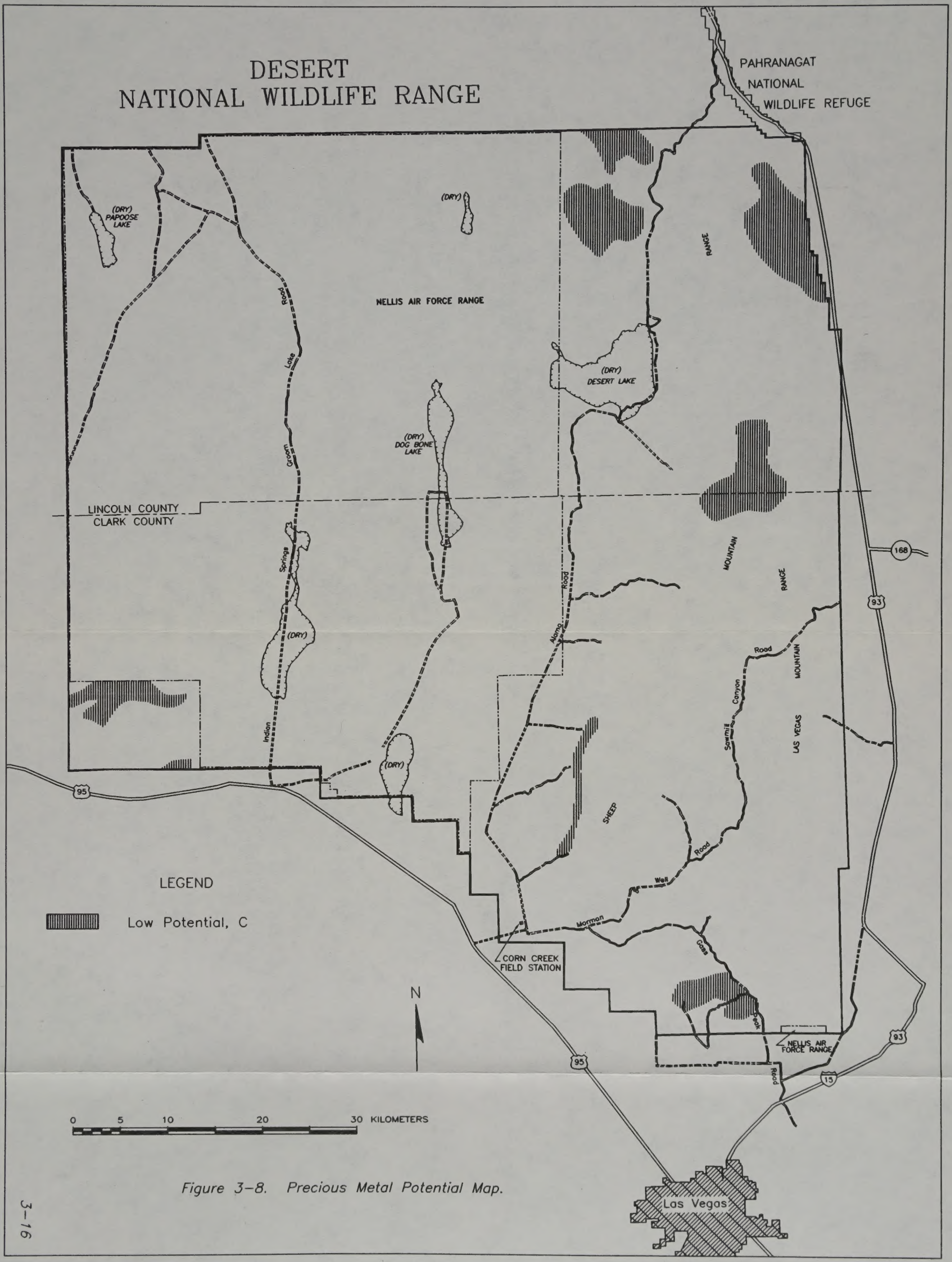

DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT
NATIONAL
WILDLIFE REFUGE
(DRY) PAPOOSE LAKE
(DRY)
NELLIS AIR FORCE RANGE
RANGE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
Groom Lake Road
Indian Springs
(DRY)
(DRY)
LINCOLN COUNTY
CLARK COUNTY
Alamo Road
MOUNTAIN
RANGE
Sawmill Canyon Road
MOUNTAIN
LAS VEGAS
SHEEP
Mormon Well Road
Gass Peak Road
168
93
95
15
CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
N
LEGEND
Low Potential, C
0 5 10 20 30 KILOMETERS
Las Vegas

Figure 3-8. Precious Metal Potential Map.

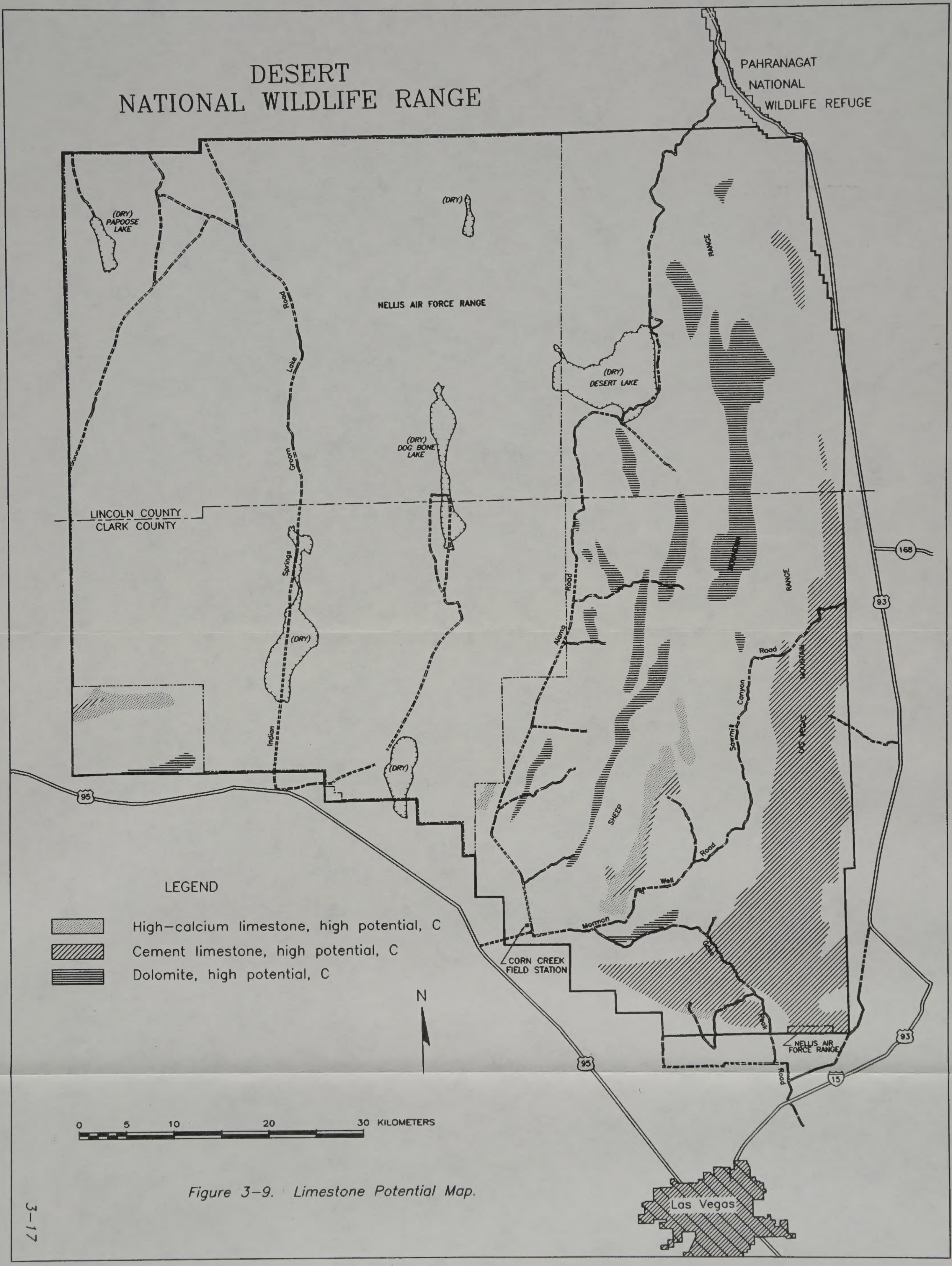

DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT
NATIONAL
WILDLIFE REFUGE
(DRY) PAPOOSE LAKE
(DRY)
NELLIS AIR FORCE RANGE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
Indian Springs Groom Lake Road
LINCOLN COUNTY
CLARK COUNTY
(DRY)
(DRY)
RANGE
DESERT
RANGE
Alamo Road
SHEEP
LAS VEGAS
MOUNTAIN
Sawmill Canyon Road
Mormon Well Road
Road
CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
95
93
168
15
Las Vegas
N
LEGEND
▨ High–calcium limestone, high potential, C
▨ Cement limestone, high potential, C
▤ Dolomite, high potential, C
0 5 10 20 30 KILOMETERS

Figure 3–9. Limestone Potential Map.

Table 3-1. Potential areas for locatable metallic mineral commodities.

Mineral Resource	Area	Resource Potential	Certainty Level	Map	Comments
Base Metals	June Bug-Sampson-Anomaly Wash	High	D	Fig. 3-7	Defined by mines and prospects, alteration, and stream sediment anomalies. Past production.
	North June Bug	High	C	Fig. 3-7	Defined by stream sediment anomalies.
	South Las Vegas Range	Low	C	Fig. 3-7	Defined by favorable stratigraphy only.
	Joe May-Deadman	Low	C	Fig. 3-7	Defined by stream sediment anomalies and structure.
	Lower Pahranagat Lake	Moderate	C	Fig. 3-7	Defined by stream sediment and rock anomalies and alterations.
	Long Canyon	Low	C	Fig. 3-7	Defined by rock and stream sediment anomalies.
	Castle Rock-Quartzite Hill	Low	C	Fig. 3-7	Defined by rock anomalies.
	North of Desert Lake	Low	C	Fig. 3-7	Defined by stream sediment anomalies.
	South Indian Springs	Low	C	Fig. 3-7	Defined by stream sediment anomalies.
Precious Metals	June Bug-North June Bug-Sampson-Anomaly Wash	Low	C	Fig. 3-8	Defined by stream sediment anomalies. Very minor production recorded.
	Joe May-Deadman	Low	C	Fig. 3-8	Defined by stream sediment anomalies.
	Cabin Spring	Low	C	Fig. 3-8	Defined by stream sediment anomalies.
	Lower Pahranagat Lake	Low	C	Fig. 3-8	Defined by stream sediment anomalies.
	South of Medsger Pass	Low	C	Fig. 3-8	Defined by stream sediment anomalies.
	North of Desert Lake	Low	C	Fig. 3-8	Defined by stream sediment anomalies.
	South Indian Springs	Low	C	Fig. 3-8	Defined by stream sediment anomalies.
	North Indian Springs	Low	C	Fig. 3-8	Defined by stream sediment anomalies.

Table 3-2. Potential areas for locatable industrial and energy mineral commodities.

Mineral Resource	Area	Resource Potential	Certainty Level	Map	Comments
High Calcium Limestone	Areas underlain by Guilmette Formation	High	C	Fig. 3-9	Defined by chemical content.lithology, and stratigraphy
Cement Limestone	Areas underlain by Guilmette Formation	High	C	Fig. 3-9	Defined by chemical content, lithology, and stratigraphy. Same areas as those that have high potential of high-calcium limestone.
	Areas underlain by Mississippian limestone	High	C	Fig. 3-9	Defined by chemical content, lithology, stratigraphy, and absence of alteration.
	Areas underlain by Bird Spring Foundation	Moderate	C	Fig. 3-9	Defined by chemical content, lithology, and stratigraphy.
Dolomite	Areas underlain by Nopah Formation, Smokey Member	High	C	Fig. 3-9	Defined by chemical content, lithology, and stratigraphy.
Silica	DNWR	Low	D		Silica resources are too expensive to mine and process.
Building Stone	DNWR	Moderate	B		No specific deposits of unique stone found.
Lightweight Aggregate	DNWR	Low	D		No known occurrences of suitable material.
Perlite	DNWR	Low	D		No known occurrences.
Gypsum	DNWR	Low	D		Stratigraphy unstable.
Clay	DNWR	Low	D		No known occurrences of sufficient purity.
Borate Minerals	DNWR	Low	D		No known occurrences.
Zeolites	DNWR	Low	D		No known occurrences of sufficient purity.
Uranium	DNWR	Low	D		No ore grade occurrences.

Definitions of Mineral Resource Potential in tables 3-1 and 3-2:

LOW mineral resource potential is assigned to areas where geologic, geochemical, and geophysical characteristics define a geologic environment in which the existence of resources is unlikely.

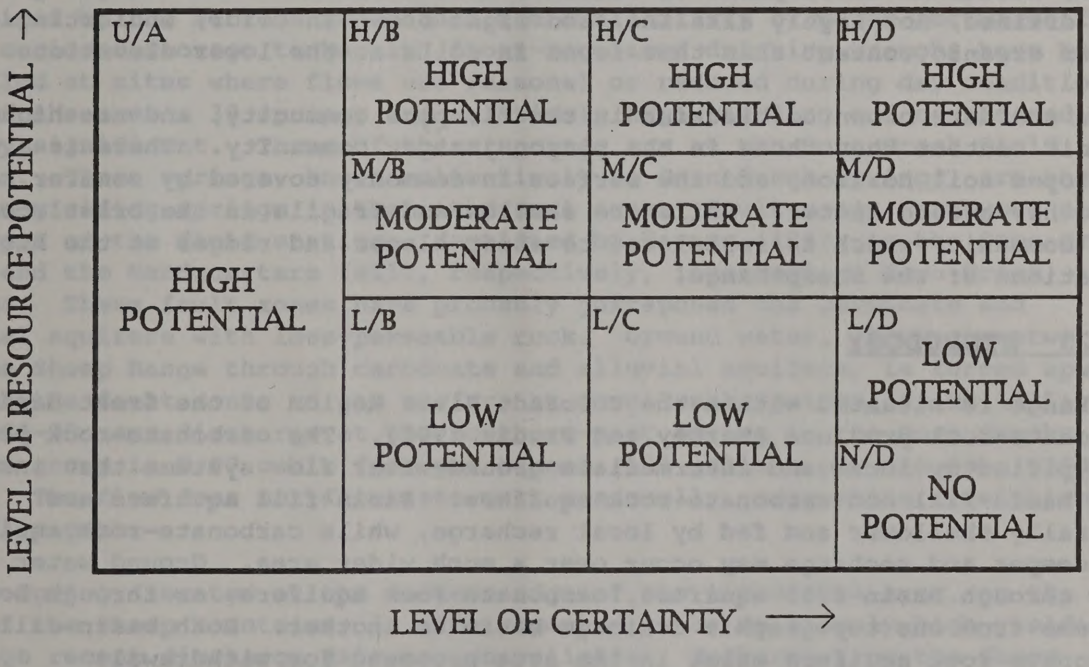
MODERATE mineral resource potential is assigned to areas where geologic, geochemical, and geophysical characteristics indicate a geologic environment favorable for resource occurrence, where interpretations of data indicate a reasonable likelihood of resource accumulation, and/or where an application of mineral-deposit models indicates favorable ground for specified type(s) of deposits.

HIGH mineral resource potential is assigned to areas where geologic, geochemical, and geophysical characteristics indicate a geologic environment favorable for resource occurrence, where interpretations of data indicate a high degree of likelihood for resource accumulation, where data support mineral-deposit models indicating presence of resources, and where evidence indicates that mineral concentration has taken place. Assignment of high resource potential to an area requires some positive knowledge that mineral-forming processes have been active in at least part of the area.

UNKNOWN mineral resource potential is assigned to areas where information is inadequate to assign low, moderate, or high levels of resource potential.

NO mineral resource potential is a category reserved for a specific type of resource in a well defined area.

LEVELS OF CERTAINTY


LEVEL OF RESOURCE POTENTIAL →
U/A
HIGH POTENTIAL
H/B
HIGH POTENTIAL
H/C
HIGH POTENTIAL
H/D
HIGH POTENTIAL
M/B
MODERATE POTENTIAL
M/C
MODERATE POTENTIAL
M/D
MODERATE POTENTIAL
L/B
LOW POTENTIAL
L/C
LOW POTENTIAL
L/D
LOW POTENTIAL
N/D
NO POTENTIAL
LEVEL OF CERTAINTY →

A: Available information is not adequate for determination of the level of mineral resource.

B: Available information suggests the level of mineral resource potential.

C: Available information gives a good indication of the level of mineral resource potential.

D: Available information clearly defined the level of mineral resource potential.

2.3.4 SOILS

Detailed soil mapping and classification have not been completed on the Range. Generalized soil characteristics are described below for each major vegetative community. Refer to the descriptions of plant communities (section 3.4.1) for locations of these general soil types.

Soils are generally silty loams within the saltbush community. They are typically gray in appearance, and in some localities, several feet deep. There may be obvious salt deposits present or a layer of crust on the surface.

Soils within the creosote bush community are commonly gray sandy loams developed from alluvial deposits. In many places there is an overlapping of "desert pavement" or cobblestone. Due to the arid conditions, leaching is minimal and soils have a high salt content.

Soils common to the blackbrush community have developed from the older alluvium deposited on the upper slopes and the rocky soils of the lower mountains. This gray desert soil is slightly darker and contains more organic matter than the soil in the creosote bush community.

Soils associated with the pinyon-juniper community tend to be deeper sandy loams, with some development of distinct soil horizons. The soil is generally well drained, not highly alkaline, and light brown in color, indicating a higher organic content than that found in soils at the lower elevations.

Soils are dark brown to blackish in the fir-pine community, and are higher in organic content than those in the pinyon-juniper community. There is a well developed soil horizon, and the surface is commonly covered by conifer needles and other ground litter. Soils are shallow and fragile in the bristlecone pine community which is restricted to steep slopes and ridges at the highest elevations of the Sheep Range.

3.3.5 HYDROLOGY

The Range is situated within the Colorado River Region of the Great Basin's carbonate-rock province (Burbey and Prudic 1991). The carbonate-rock province is typified by local and intermediate ground-water flow systems that include both basin-fill and carbonate-rock aquifers. Basin-fill aquifers are generally shallower and fed by local recharge, while carbonate-rock aquifers are deeper and recharge may occur over a much wider area. Ground water can flow through basin-fill aquifers, carbonate-rock aquifers, or through both systems from one topographic drainage basin to another. Both basin-fill and carbonate-rock aquifers exist in the area proposed for withdrawal.

The principle source of recharge to the Colorado River Region occurs from precipitation within the Region itself. In and near the proposed withdrawal area, precipitation falling on the Sheep and Las Vegas Mountains contributes to ground-water recharge. Some of the precipitation infiltrates into faults, joints, fractures, or cavernous solution openings in carbonate rocks, recharges the deep regional aquifer system, and flows off the Range. Recent research by Thomas (1988) suggests that a large portion of the deep-aquifer flow from the Sheep Mountains is deflected towards the Muddy Springs area rather than flowing radially into the surrounding valleys, including Las Vegas Valley. Lesser amounts of precipitation infiltrate into shallow permeable noncarbonate or carbonate beds, and recharge small, isolated aquifer systems.

There are 33 known springs on the portion of the Range proposed for withdrawal (figure 3-10 and table 3-3). None of these springs is a "regional spring," that is, a spring fed by the deep carbonate-rock aquifer system. All of the springs are recharged by precipitation falling on nearby mountains and are considered "local springs."

Twenty-nine of the springs are typical small mountain springs with flows derived from nearby areas of higher altitude. These springs are "perched" or isolated above the main carbonate-rock ground-water body and have flows ranging from several gallons per minute to only a few gallons per hour. Discharges are seasonally variable, with flows highest during or immediately after spring runoff and storm events and then diminishing or ceasing in late summer or early fall. Discharge from the springs usually travels only a short distance from the point of emanation, as much of the flow is lost to evapotranspiration.

With the exception of Upper White Blotch, Lower White Blotch, Red Ram, and Cherry springs, all of the small mountain springs have been developed and are maintained by the Service to enhance the availability of water for wildlife. Large enclosed storage tanks with float-regulated drinking troughs have been installed at sites where flows are seasonal or reduced during dry conditions. Four of the area's 33 springs are relatively high-yielding and considered locally significant. Three of these springs are at the Corn Creek Field Station. These springs, known collectively as Corn Creek Springs, are the highest-yielding springs in the withdrawal area. Fault zones northwest and northeast of the field station, identified by Haynes (1967) as the Corn Creek fault and the Headquarters fault, respectively, intersect at Corn Creek Springs. These fault zones have probably juxtaposed the carbonate and alluvial aquifers with less-permeable rock. Ground water, flowing westward off the Sheep Range through carbonate and alluvial aquifers, is forced upward through the fault zones to the surface at Corn Creek Springs (Fiero 1975). The 1985-90 mean discharge at the northern-most spring in the Corn Creeks Springs group is 0.27 cubic feet per second (121 gallons per minute) (USGS 1990). The flow does not fluctuate much seasonally, suggesting a relatively long flow path.

Coyote Spring, located at the eastern edge of the withdrawal area, on the east side of the Sheep Mountains, is also reported to be relatively high-yielding, although recent discharge data are unavailable. Recharge from the Sheep Mountains flows eastward discharging from an alluvial water-bearing zone in the bluffs on the west side of the White River channel. Coyote Spring is considered semiperched, since there appears to be some vertical leakage into the White River's main ground-water system (Eakin 1964).

The Service holds reserved water rights to all of the springs in the proposed withdrawal area except Corn Creek Springs. The priority date of the water rights is the date of the Range's land reservation, May 20, 1936.

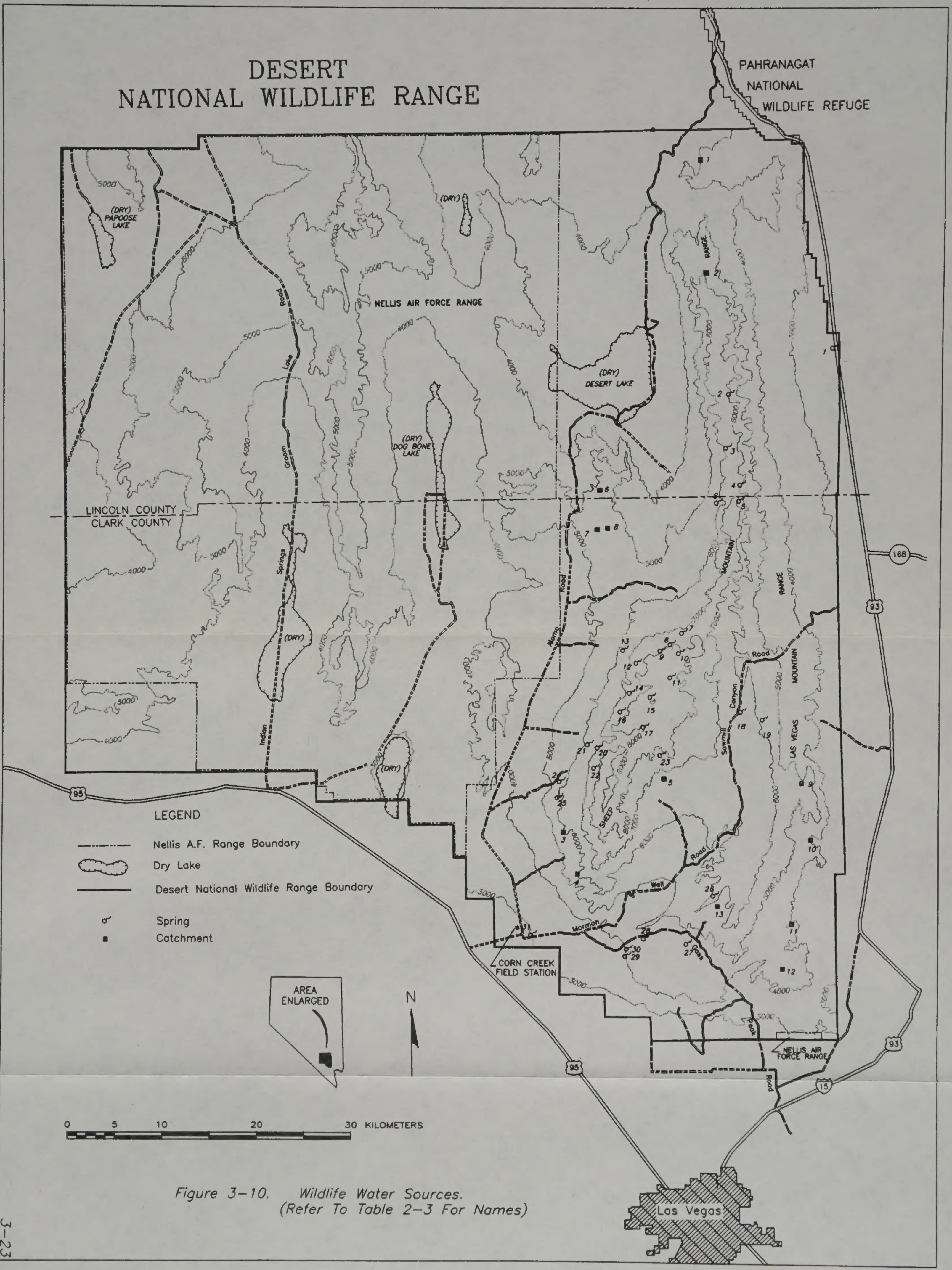

DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT
NATIONAL
WILDLIFE REFUGE
(DRY) PAPOOSE LAKE
(DRY)
NELLIS AIR FORCE RANGE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
LINCOLN COUNTY
CLARK COUNTY
Groom Lake Road
Indian Springs
Alamo Road
SHEEP RANGE
MOUNTAIN
LAS VEGAS RANGE
MOUNTAIN
Sawmill Canyon Road
Mormon Well Road
Gass Peak Road
CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
95
93
168
15
Las Vegas
LEGEND
Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
Spring
Catchment
AREA ENLARGED
N
0 5 10 20 30 KILOMETERS
3000
4000
5000
6000
7000
8000

Figure 3–10. Wildlife Water Sources.
(Refer To Table 2–3 For Names)

Table 3-3. Water Sources, proposed mineral withdrawal area. Refer to figure 3-10 for locations.

Natural Springs.

Sheep Range:

1. Coyote
2. Lamb
3. Sheep
4. Cherry
5. Grapevine
6. Cabin
7. Bootleg
8. Shale Cut
9. Yellowjacket
10. Perkins
11. Sawmill
12. Basin
13. White Rock
14. Canyon
15. Quijinump
16. Pine
17. Wiregrass
20. Upper Deadman
21. Lower Deadman
22. Wagon
23. Red Ram
24. Cow Camp
25. Rye Patch

Las Vegas Range:

18. Mormon Well
19. Wamp
26. Quail
27. Gass
28. White Spot
29. Upper White Blotch
30. Lower White Blotch

Corn Creek Field Station:

31. Corn Creek (3)

Catchments.

East Pahranagat Range

1. Enclosure (slick-rock catchment)

Sheep Range

2. Woody (hypalon apron guzzler)
3. Joe May (metal apron guzzler)
4. Spot Canyon (metal apron guzzler)
5. Natural Tank (tinaja)

East Desert Range

6. Rug Mountain (slick-rock catchment)
7. Saddle Mountain (fiberg. apron guzzler)
8. Saddle Mountain (hypalon apron guzzler)

Las Vegas Range

9. Juniper Peak (fiberglass apron guzzler)
10. Hidden Valley (slick-rock catchment)
11. Frozen Toe (slick-rock catchment)
12. Apex Burn (fiberglass apron guzzler)
13. Quail (metal apron guzzler)

The Service claims a vested water right (assigned serial number 02806 by the Nevada State Engineer) to the Corn Creek Springs. The date of initial appropriation, 1885, preceded the March 22, 1913, establishment of current Nevada State water law.

In addition to spring sources, a variety of artificial rainwater catchments have also been built on the Range to expand the quantity and distribution of water for wildlife. There are currently 12 functional catchments in scattered locations on the proposed withdrawal area (figure 3-10 and table 3-3). Many of the water catchments on the Range have been built through voluntary cooperative efforts of the Fraternity of the Desert Bighorn Sheep, a local private organization.

Artificial catchments of two types are used on the Range. Guzzlers use an impermeable surface of either sheet metal, fiberglass, or polyethylene (Hypalon) to collect rainwater. Slick-rock developments use a small concrete dam to collect rainwater/runoff from a smooth, up-canyon rock surface. Water collected by both types is piped to one or more enclosed tanks with storage capacities varying from 1,000 to 6,600 gallons. Water from the tanks is piped to float-regulated troughs for wildlife use.

There also is one natural rainwater catchment or "tinaja" (figure 3-10 and table 3-3) on the withdrawal area which is of value to desert bighorn sheep and other wildlife. This tinaja is somewhat unusual in southern Nevada because the carbonate-based sedimentary rocks eventually dissolve in the presence of water.

3.4 BIOLOGICAL FACTORS

3.4.1 VEGETATION

Four distinct vegetative types have been documented on the Range. Publications of Spaulding (1981) and Bradley and Deacon (1967) describe these in detail and are the basis for the following discussion.

Transitions between vegetative types and their integrated communities are often subtle and occur at different elevations due to local environmental anomalies. Figure 3-11 shows the gross distribution of the major plant communities in the proposed withdrawal area using topographical lines where transitions generally occur.

Desert Shrub Vegetative Type. Most of the habitat on the Range is classified as the desert shrub vegetative type. On the valley floors and lower bajadas (alluvial fans) below 1,280 meters (4200 feet), the creosote bush (*Larea divaricata*) community predominates. In many areas, white bur sage (*Franseria dumosa*) is co-dominant. Other shrubs occurring in this community including indigo bush (*Dalea fremontii*), Mormon tea (*Ephedra sp.*), purple sage (*Salvia dorrii*), and turpentine broom (*Thamnosma montana*). Yuccas, especially the Mohave yucca (*Yucca schidigera*), are also present. Cacti are common and include the beavertail cactus, hedgehog cactus, and cholla (*Opuntia sp.*).

The blackbrush (Coleogyne ramosissima) community predominates on the upper bajadas and lower slopes between 1,280 and 1,829 meters (4,200 to 6,000 feet). A variety of other shrubs also occur including many of those present in the lower creosote bush community. Yuccas, especially the Joshua tree (Yucca brevifolia) and banana yucca (Yucca baccata), are numerous in many localities. Cacti tend to be less abundant than in the creosote bush community, whereas, grasses such as Indian ricegrass (Oxyzopsis hymenoides) and needlegrass (Stipa sp.), are more abundant.

Saltbush (Atriplex confertifolia) communities occur in various basins within the blackbrush and creosote bush communities. Soils in these depressions tend to be highly saline. Excellent examples of saltbush/shadscale communities can be found on the margins of the lake playas.

A variety of shrubs are more common along the lower washes that traverse the various communities than in the surrounding desert. These include cheese bush (Hymenoclea salsola), snakeweeds (Gutierrizia sp.) and bladder sage (Salazaria mexicana).

Woodland Vegetative Type. The pinyon-juniper (Pinus monophylla and Juniperus osteosperma) community is most prevalent on the drier slopes between approximately 1,829 and 2,286 meters (6,000 and 7,500 feet). Pinyon-juniper is often displaced by mountain mahagony (Cercocarpus sp.) on the driest, southern exposures of the Sheep Mountain Range. Sagebrush (Artemisia sp.) is dominant in some transitional zones between the desert shrub and woodland vegetative types, especially in the Searle's Reservoir watershed and above Deadhorse Trailhead and Yucca Forest.

A number of shrubs and small trees are quite common along the upper washes and cliff bases. These include cliff rose (Cowania mexicana), apache plume (Fallugia paradoxa), rubber rabbitbrush (Chrysothamnus nauseosus), and desert peach (Prunus fasciculata).

Coniferous Forest Vegetative Type. The coniferous forest vegetative type is restricted to the Sheep Mountains. The fir-pine (Abies concolor and Pinus ponderosa) community extends from approximately 2,286 meters (7,500 feet) to over 2,743 meters (9,000 feet) and accounts for most of the acreage in this vegetative type. The closed canopy of this community suppresses understory development. Shrubs and small trees such as Rocky Mountain maple (Acer glabrum), littleleaf mock-orange (Philadelphus microphyllus), and fernbush (Chamaebatiaria millifolium) occur in the more open canyon bottoms,.

Bristlecone (Pinus aristata) pine generally occurs from 2,743 meters (9,000 feet) to timberline. However, on steep north- and east-facing slopes, it extends to lower elevations. Few shrubs are abundant in this community.

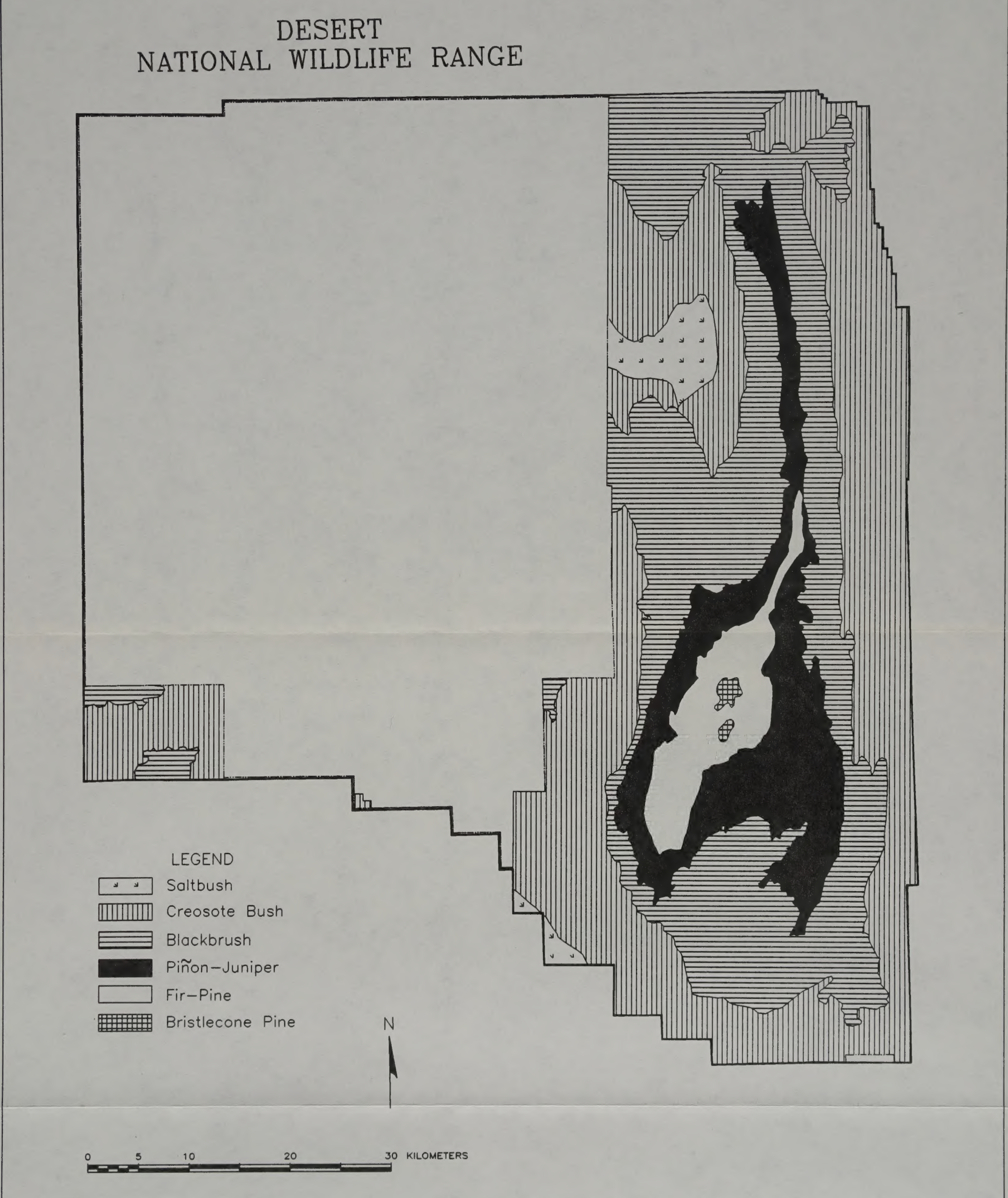

DESERT
NATIONAL WILDLIFE RANGE
LEGEND
Saltbush
Creosote Bush
Blackbrush
Piñon–Juniper
Fir–Pine
Bristlecone Pine
N
0
5
10
20
30 KILOMETERS

Figure 3–11. Plant Communities.

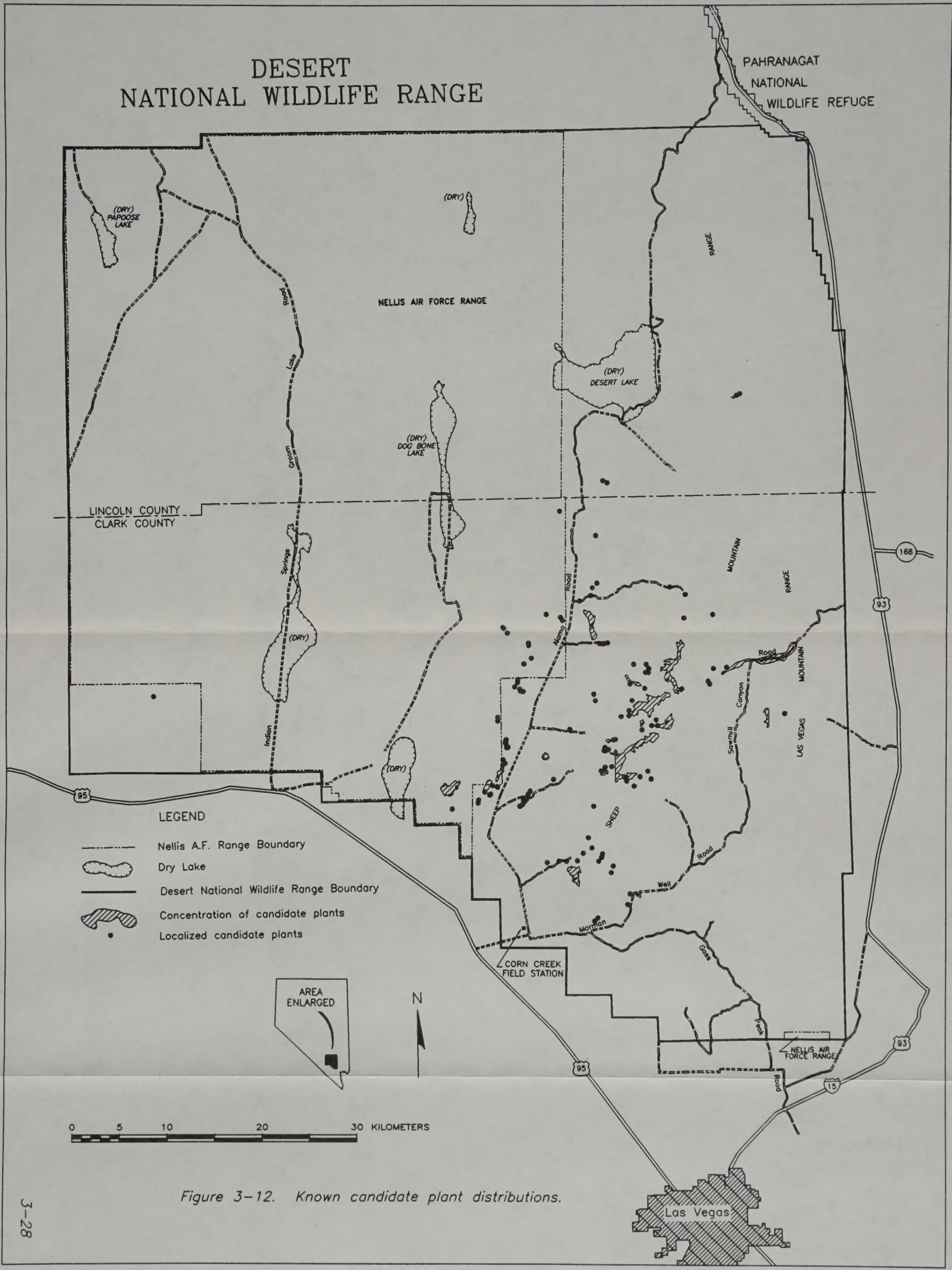

DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT
NATIONAL
WILDLIFE REFUGE
(DRY) PAPOOSE LAKE
(DRY)
NELLIS AIR FORCE RANGE
Groom Lake Road
RANGE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
LINCOLN COUNTY
CLARK COUNTY
Indian Springs Road
Alamo Road
168
93
MOUNTAIN
RANGE
(DRY)
Road
Sawmill Canyon
MOUNTAIN
LAS VEGAS
(DRY)
95
SHEEP
Road
Well
Mormon
Gass Peak Road
CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
93
95
15
Las Vegas
LEGEND
Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
Concentration of candidate plants
Localized candidate plants
AREA ENLARGED
N
0 5 10 20 30 KILOMETERS

Figure 3–12. Known candidate plant distributions.

Pseudo-Alpine Vegetative Type. The pseudo-alpine vegetative type encompasses only approximately 80 hectares (200 acres) on the south and west facing slopes of Hayford and Sheep Peaks above 2,895 meters (9,500 feet). It is comprised of a black sagebrush (Artemisia nova) community.

Threatened and Endangered Species: There are eleven category 2 candidate threatened/endangered plant species known to occur or suspected of occurring on the Range. Category 2 species include taxa for which existing information indicated may warrant listing, but for which substantial biological information to support a proposed rule is lacking. The candidate species are:

a. white bear desert poppy (Arctomecon merriamii)
b. black wooly-pod (Astragalus funereus)
c. curve popped mojave milkvetch (Astragalus mohavensis hemigyrus)
d. Sheep Mountain milkvetch (Astragalus musimonum)
e. no common name (Camissonia megalantha)
f. no common name (Chrysothamnus eremobius)
g. sheep fleabane (Erigeron ovinus)
h. rosy bicolor penstemon (Penstemon bicolor roseus)
i. Beatley phacelia (Phacelia beatleyae)
j. purple sage (Salvia dorrii clokeyi)
k. mound ground-daisy (Townsendia jonesii tumulosa)

Plant studies by Thomas L. Ackerman (1981) describe the known distribution and abundance of eight of the eleven candidate plant species (figure 3-12). Unless cited otherwise, all of the following information is based on Ackerman's findings.

White bear desert poppy is a low, perennial herb with hairy leaves toothed at their apex. The flowers are white. On the Range, it was found in 182 areas (bajadas, foothills, and mountains) of nine different mountian ranges between 975 and 1,920 meters (3,200 and 6,300 feet). It is probably also found in many areas other than those located by Ackerman. Table 3-4 summarizes population counts of poppies made in 1979.

Black wooly-pod is a wooly-haired, low mat-forming perennial herb with rose-purple flowers. On the Range, it has only been found outside the proposed withdrawal area on unstable, steep volcanic tuff slopes from 1,190 to 1,220 meters (3,900 to 4,000 feet). Ackerman (1981) and Susan Cochrane found one population of 50+ plants and another population of seven plants in the Halfpint Mountains outside the proposed withdrawal in 1979.

Sheep Mountain milkvetch is a low, tufted, short stemmed, densely haired, prostrate perennial herb with pink-purple flowers. It is very similar to A. amphioxys var. modestus, the only difference between the two being the length of the calyx tube. According to Rupert C. Barneby of the New York Botanical Garden, it may just be another variety. On the Range, it was found in the Las Vegas Mountains (two areas from 1,340-1,710 meters (4,400-5,600 feet)), Sheep Mountains (six areas from 1,585-1,950 meters (5200-6400 feet)) and East

Desert Mountains (two areas at 1,615 and 1,645 meters (5300 and 5400 feet)). The East Desert Mountains populations consisted of one and ten plants, respectively. In the Las Vegas Mountains and the Sheep Mountains, populations varied from a few plants in local areas to widely scattered plants over large areas. Ackerman(1981) felt it could be found in many more areas.

Table 3-4. Poppy counts on Desert National Wildlife Range, 1979.

Mountain Range	# of Mature Plants	# of Seedlings	Total Plants	Range	# Areas Where Counted
Sheep Mountains	47	21	68	1-49	5
Banded Mountains	10	4	14	1-4	5
Desert Mountains	269	124	393	1-150	25
Pintwater Mountains	370	183	553	1-235	29
Spotted Mountains	804	153	957	1-108	32
Black Hills	9	125	134	1-72	7
Desert Hills	-	2	2	1	2
E. Desert Mountains	3	15	18	3-15	2
Ranger Mountains	19	29	48	1-40	3
Totals	1531	656	2187		110

Camissonia megalantha is a 2-5 dm. (8- 20 in.) tall annual plant with reduced leaves and open flower inflorescence above the basal cluster of leaves. Flower petals are pinkish and sometimes with basal red spots. On the Range, it is found in 31 locations, all of which are in the Halfpint Mountains and outside the proposed withdrawal area. It was found by Ackerman (1981) to vary from a few plants in a small area to many plants over large areas. Dr. Peter H. Raven of the Missouri Botanical Garden feels it may be a subspecies of C. heterochroma.

Sheep fleabane is a perennial herb, 5-15 cm. (2-6 in.) tall, with densely spreading hirsute hairs on the stems and leaves, and solitary flower heads with disk flowers only. It has been found in 31 areas on the Sheep Mountains. The plants are usually found scattered in rocky crevices in local areas, but in three areas (one in Wagon Canyon and two in Deadman Canyon), it occurs over extensive areas. It is usually found on northern exposures from 1,890 to 2,560 meters (6,200 to 8,400 feet).

Rosy bicolor penstemon is an herbaceous perennial, 5-12 dm. (20-47 in.) tall, with opposite, coarsely toothed, thickish and glaucescent leaves and rose-pink flowers. On the Range, it has been found in only three very local areas in washes and slopes at the south end of the Las Vegas Mountains from 1,160 to 1,370 meters (3,800 to 4,500 feet). Each of the three areas had few individuals in 1974 and 1975.

Beatley phacelia is an erect 5-10 cm. (2-4 in.) tall annual, with one to a few stems and no basal rosettes of leaves. The corrolla is variably lavender or lavender streaked with a yellowish tube. This species has been found in eight areas outside the proposed withdrawal area, all in the Halfpint Mountains.

Mound ground-daisy is a very low perennial herb (up to 3 cm. (1.2 in.) tall). Stems are covered with many, hairy leaves which are as tall as the flowers. Ray flowers are whitish on top and rose underneath. Disk flowers are yellow and usually purplish-tinged at the tip. This plant was found at 39 areas in the Sheep Mountains from 1,980 to 3,015 meters (6500 to 9900 feet). Occurrence varied from rare (in one place at 1.980 meters (6500 feet)), to scattered individuals over large areas of ridges and slopes, to locally common in canyon floors and washes from 2,195 to 3,015 meters (7200 to 9900 feet).

3.4.2 INVERTEBRATES

The invertebrate fauna of the Range is not well known. The Final EIS for the Nevada Test Site (USDOE 1977), located on the Range's western boundary, estimated a total of 1,028 species of invertebrates on that area.

Some invertebrate information is available from studies undertaken at the Corn Creek impoundments. Heckman (1987) identified larval nematodes on poolfish in 1986 and 1987. Nevada Department of Wildlife Endemic Fisheries Biologist Heinrich and his predecessor (1991) have identified a variety of insects in the stomachs of bullfrogs including bees, wasps, moths, ants, crickets, beetles, and sow bugs.

George T. Austin (1992) of the Nevada State Museum and Historical Society has collected butterflies on the Range on various occasions. His list of butterflies of Desert National Wildlife Range includes 16 species in the family Hesperiidae, 3 species in the family Papilionidae, 11 species in the family Pieridae, 13 species in the family Lycaenidae, 1 species in the family Libytheidae, and 17 species in the family Nymphalidae.

Threatened and Endangered Species. The Nevada admiral (Limenitis weidemeyerii nevadae) is a category 2 candidate threatened/endangered invertebrate species known to occur on the Range. Category 2 species include taxa for which existing information indicated may warrant listing, but for which substantial supporting biological information is lacking. Little is known about the presence of the Nevada admiral on the Range. It was collected on July 1-2, 1969 in Sawmill Canyon of the Sheep Mountains between 2,042 and 2,286 meters (6,700 and 7,500 feet) by J.F. Emmel and O. Shields (Austin 1992).

3.4.3 FISH

The only species of fish present on the Range is the endangered Pahrump poolfish (Empetrichthys latos). This small non-game fish was endemic to Manse Spring in the Pahrump Valley northwest of Las Vegas. Thirty five poolfish were introduced into the man-made impoundments at Corn Creek Field Station in 1971 prior to the destruction of their native habitat. Since 1971, additional subpopulations have been established in the Shoshone Ponds near Ely, Nevada, and in the Spring Mountain Range State Park west of Las Vegas, Nevada.

The Corn Creek population has thrived since the original introduction. A recent survey by the Nevada Department of Wildlife (1991) estimated approximately 8,000 fish.

3.4.4 REPTILES AND AMPHIBIANS

Due to the Mohave Desert's extremely arid environment, the only amphibians known on the Range are restricted to the Corn Creek impoundments. These include the rare Pacific tree frog and the common bullfrog. Refer to Appendix B for a complete list of reptiles and amphibians.

Reptiles are well represented on the refuge's faunal list (appendix B) at lower altitudes. These include the desert tortoise, 14 species of snakes and 13 species of lizards. Most of the Range's reptilian species inhabit the desert shrub vegetative type. Vegetation provides food for some reptile species and habitat for invertebrates which provide food for other reptile species. Nearly all reptiles use rocks and soil burrows for escape cover. The zebra-tailed, western whiptail and side-blotched lizards are the most common diurnal lizards, and the most conspicuous of the reptiles. Most of the snakes are nocturnal. The most abundant non-venomous species include the red racer and gopher snake.

Threatened and Endangered Species: The desert tortoise, a threatened species, is widely distributed on the Range below 1,280 meters (4,200 feet) in elevation and in association with the creosote bush community (figure 3-11). Tortoise surveys on the proposed withdrawal area indicate a low density population of approximately 1 tortoise per 20 acres (Schneider and Turner 1981, Sharp 1989, Zeller 1990). Desert tortoises are most active during spring and fall when green grasses and forbs are present for food. Tortoises spend the hottest part of the summer in burrows, usually dug in the root zone of desert shrubs, to avoid overheating. Tortoises also hibernate in permanent dens during the coldest part of winter.

The chuckawalla is a Category 2 candidate species. Category 2 candidate species include taxa for which existing information may warrant listing, but for which substantial supporting biological information is lacking. The chuckawalla is a large, flat, dark-bodied lizard with loose folds of skin on its neck and sides. On the Range, the chuckawalla is an uncommon resident in rocky terrain from 610 to 1,220 meters (2,000 to 4,000 feet) in elevation, in association with the creosote bush community. Leaves of the creosote bush are a staple food.

3.4.5 BIRDS

Including accidentals and rarities, over 300 species of birds have been observed on the Range and 116 species are known to nest (Appendix B). Species diversity and population density are highest in the vicinity of perennial springs. Water and the relatively lush riparian vegetation it supports are a focal point for nesting and rearing of young, provide habitat for yearlong food gathering and cover, and are essential for survival of most birds during

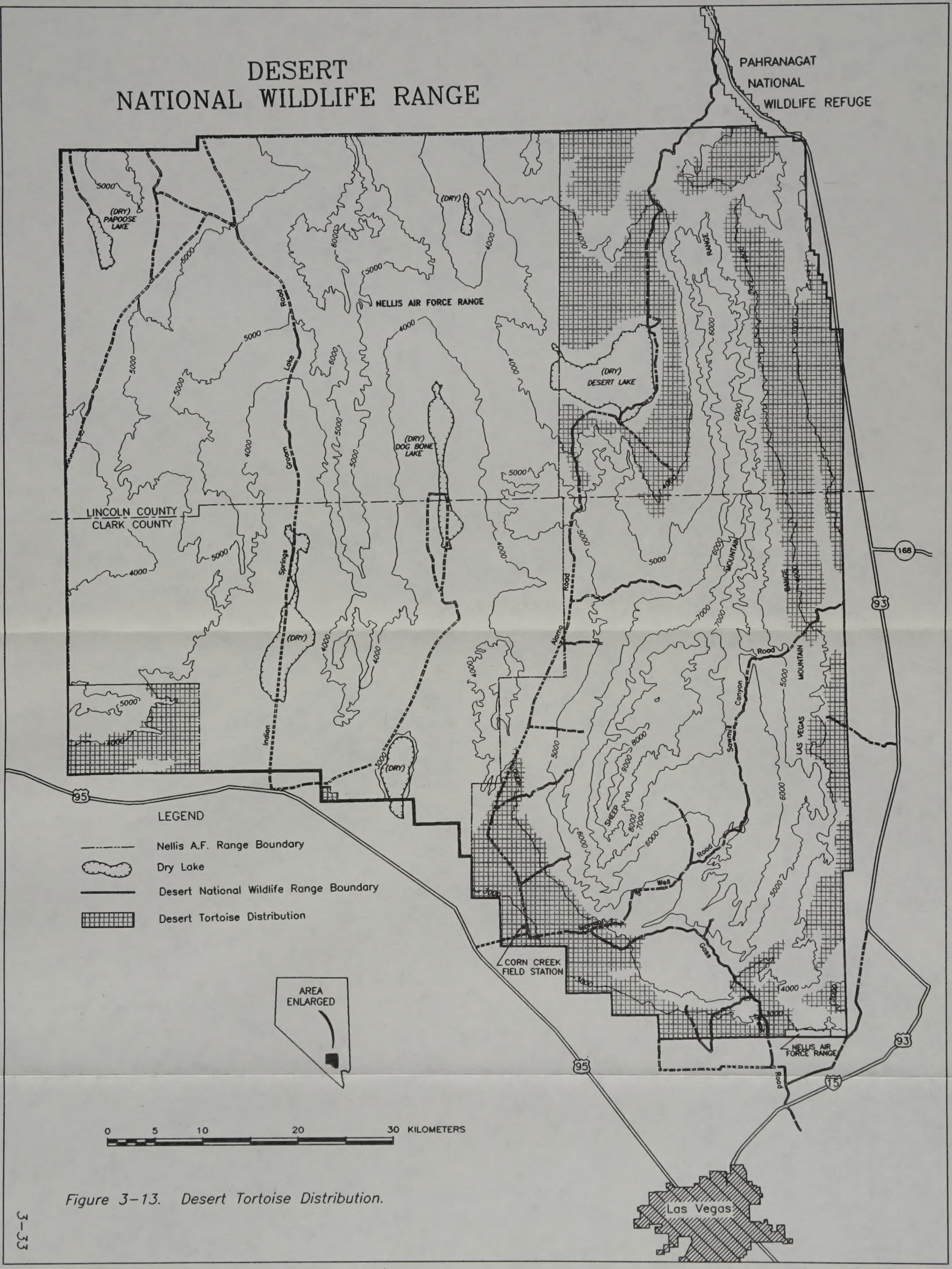

DESERT NATIONAL WILDLIFE RANGE
PAHRANAGAT NATIONAL WILDLIFE REFUGE
NELLIS AIR FORCE RANGE
(DRY) PAPOOSE LAKE
(DRY)
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
Groom Lake Road
Indian Springs
Alamo Road
Sawmill Canyon Road
Well Road
Gass Road
SHEEP RANGE
LAS VEGAS RANGE
SHEEP MOUNTAIN
LAS VEGAS MOUNTAIN
LINCOLN COUNTY
CLARK COUNTY
CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
Las Vegas
95
93
168
15
3000
4000
5000
6000
7000
8000
9000
LEGEND
Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
Desert Tortoise Distribution
AREA ENLARGED
0
5
10
20
30 KILOMETERS

Figure 3–13. Desert Tortoise Distribution.

the dry, hot summers. At Corn Creek, the introduced vegetation (pasture grasses, sunflowers, cattails, and fruit trees) serves as an additional attractant.

Many of the birds on the Range are migrants that stop temporarily on their flights between breeding and wintering grounds. The desert shrub plant communities are especially important as migrant bird habitat. Many perching birds use desert shrubs for temporary cover and foraging habitat during migrations, while the roadrunner, cactus wren, Le Conte's thrasher, and black-throated sparrow are permanent residents.

Threatened and Endangered Species. Two threatened and endangered bird species, the bald eagle (Haliaeetus leucocephalus) and peregrine falcon (Falco peregrinus anatum), occur as rare migrants on the Range. There are also two Category 2 candidate bird species on the Range, the northern goshawk (Accipter gentilis) and the loggerhead shrike (Lanius ludovicianus). Category 2 candidate species include taxa for which existing information may warrant listing, but for which substantial supporting biological information is lacking.

The northern goshawk is rare in the higher altitude woodland and coniferous forest vegetative types of the Sheep and Las Vegas Mountains. The loggerhead shrike is common on the Range in the desert shrub vegetation type, especially in association with yuccas which are most prevalent on alluvial fans in the blackbrush community. Shrikes use yucca flower stalks and other high points for hunting perches to prey on insects, lizards, mice, and small birds. Shrikes also nest in desert shrubs.

3.4.6 MAMMALS

There are 53 species of mammals documented to occur on the Range (appendix B-2). Common names in this text are from Burt and Grossenheider's Field Guide to the Mammals. Carnivores on Desert National Wildlife Range include the coyote, kit fox, gray fox, ringtail cat, bobcat, mountain lion, badger, spotted skunk, and striped skunk. The skunks and ringtail cats are not common.

Ungulates at Desert National Wildlife Range include mule deer and desert bighorn sheep. Mule deer occur primarily in the higher altitudes of the Las Vegas and Sheep Mountains, and are not nearly as abundant on the Range as they are in central and northern Nevada. The total population is estimated at less than 250 deer

Desert bighorn sheep, the primary species for which the Range was established, are widely distributed throughout the precipitous terrain in the proposed withdrawal area (figure 3-14). Steep rocky terrain is critical for escape habitat for bighorn sheep, and bighorns use grass, forbs, and desert shrubs for food. Bighorns feed on steep terrain if adequate forage is available, but they also feed on alluvial fans and drainage bottoms near steep slopes if necessary.

Seasonal bighorn distribution and habitat use of the range is highly dependent upon weather patterns. During warm, dry periods sheep depend on and concentrate near waterholes, which are mostly at middle and higher elevations in the Sheep and Las Vegas Mountains. They tend to disperse into areas with little or no permanent water during cooler, moister periods, and to snow-free slopes at lower elevations during the most severe winter weather.

Seasonal movements sometimes include cross valley movement from one mountain range to another. The Sheep Mountains provide the best yearlong habitat with its bighorn population increasing during the summer with migrants from the Desert, East Desert, and Las Vegas Mountains. There are also periodic movements into the northeastern section of the Sheep Mountains from a transplanted population in the East Pahranagat Mountains to the north. Parts of the Las Vegas Mountains are utilized yearlong by bighorns, with the heaviest use usually occurring on the south-facing slopes of Gass Peak during the winter and spring months. Lambing often takes place there and on other steep slopes throughout the proposed withdrawal area. Lambing is not restricted to the same geographic area each year; but nearly always occurs on steep terrain to provide a means of escape from ground predators.

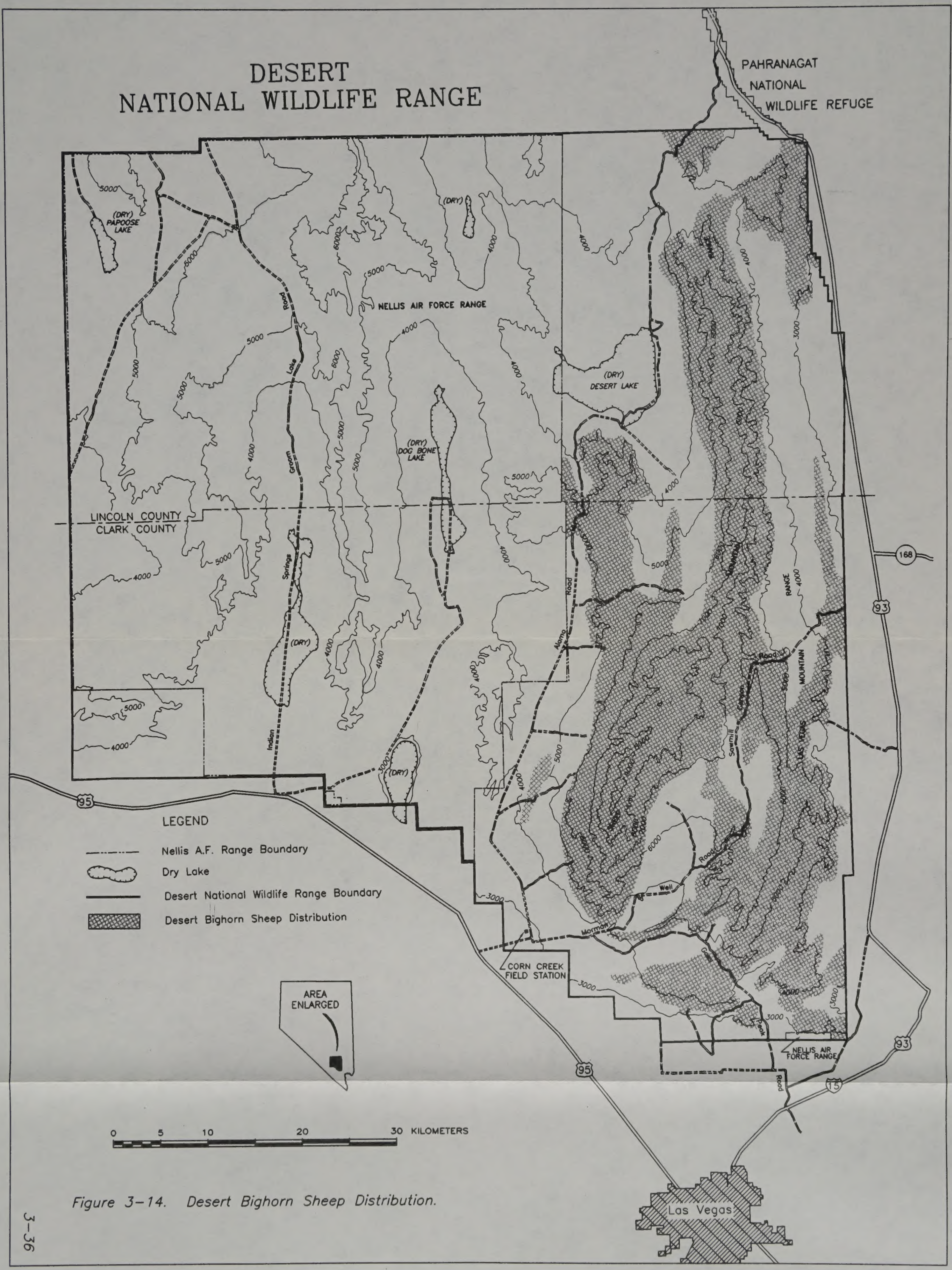
Currently, the refuge bighorn population is estimated at 975 individuals (Zeller 1991). Helicopter survey data show a downward trend in the bighorn population (table 3-5). The drought experienced in southern Nevada over the past five years is believed to be the primary cause for the decline through both direct mortality and indirect effects on their habitat.

Table 3-5. BIGHORN HELICOPTER SURVEY RESULTS: 1986 - 1991

Year	Mountain Range(s)	Survey Hours	Total Observed (Ewe:Lamb:Ram)	Sheep Per Hr	Ratio Ram/Ewe/Lamb
1991	All	30.1	260(154:44:62)	8.6	40/100/29
1990	All	30.6	338(205:61:72)	11.1	35/100/30
1989	All	29.5	286(167:19:100)	9.7	60/100/11
	Subtotal:	90.2	884(526:124:234)	Ave: 9.8	44/100/24
1988	All	30.4	*432(262:47:120)	14.2	46/100/18
1987	All	31.0	527(314:78:135)	17.0	43/100/25
1986	All	31.3	572(355:75:142)	18.3	40/100/21
	Subtotal:	92.7	1531(931:200:397)	Ave: 16.5	43/100/21

* Three Sheep Were Not Classified

Threatened and Endangered Species. There are two Category 2 candidate mammal species believed to occur on the Range, the spotted bat (*Euderma maculatum*) and Hidden Forest chipmunk (*Eutamias unbrinus nevadensis*). Category 2 candidate species include taxa for which existing information may warrant listing, but for which substantial supporting biological information is lacking.


DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT
NATIONAL
WILDLIFE REFUGE
(DRY) PAPOOSE LAKE
(DRY)
NELLIS AIR FORCE RANGE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
LINCOLN COUNTY
CLARK COUNTY
Indian Springs Groom Lake Road
Alamo Road
Sawmill Canyon Road
Mormon Well Road
RANGE
MOUNTAIN
(DRY)
168
93
95
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CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
Las Vegas
3000
4000
5000
6000
LEGEND
Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
Desert Bighorn Sheep Distribution
AREA ENLARGED
0
5
10
20
30 KILOMETERS

Figure 3–14. Desert Bighorn Sheep Distribution.

The Hidden Forest chipmunk is a subspecies of the Uinta chipmunk. It occurs in the coniferous forest community in the Sheep Mountains in undetermined numbers. The spotted bat's presence on the Range is unconfirmed.

3.4.8 DESERT ECOSYSTEM

The Range is a primitive, undeveloped expanse of wildland with characteristics of both the Mohave Desert and the Great Basin. Because of the Range's relatively large size, tremendous range of elevation, and long history of protection, a mosaic of nearly every ecological community that occurs in southern Nevada has been preserved in a nearly pristine condition. In fact, the proposed withdrawal area may be the single best remaining undisturbed example of a diverse Mojave Desert/mountain ecosystem (Wuerthner 1993).

Much of the diversity of the biological communities on the Range is due to the mountains which rise above the desert floor as islands of cooler and moister environment. The elevation variation from the desert floor at less than 915 meters (3,000 feet) to the highest peaks at nearly 3,050 meters (10,000 feet) and the resulting changes in precipitation, temperature, and soils have resulted in development of several well-defined plant communities as described in section 3.4.1 and shown in figure 3-11. Animal species also tend to associate with one or more plant communities which best fulfill their seasonal habitat requirements. In many cases, the plant communities and associated animals at the highest elevations are more similar to those in northern Nevada than they are to those on the desert floor.

The general plant/animal associations shown in Table 3-6 were adapted from Bradley and Deacon (1967), and other more specific relationships are discussed in the wildlife section. Amphibians and fish were not included in the above table since their range is restricted to the Corn Creek Field Station. Information on invertebrates is inadequate to show distribution by community.

Table 3-6. DISTRIBUTION OF WILDLIFE AMONG PLANT COMMUNITIES ON DESERT NATIONAL WILDLIFE RANGE

Species	Creosote Bush	Black-brush	Salt-bush	Pinyon-Juniper	Fir-Pine	Bristle-Cone Pine	Pseudo-Alpine
REPTILES:							
desert tortoise	X		X				
zebra-tailed lizard	X	X	X				
western whiptail lizard	X	X	X	X			
side-blotched lizard	X	X	X				
red racer snake	X	X					
gopher snake	X	X		X	X		
MAMMALS:							
western pipistrel bat	X	X	X	X	X		
Mexican freetail bat	X	X	X	X			
blacktail jackrabbit	X	X	X	X	X	X	

Table 3-6 (Cont.). DISTRIBUTION OF WILDLIFE AMONG PLANT COMMUNITIES ON DESERT NATIONAL WILDLIFE RANGE

Animal Species	Creosote Bush	Black-brush	Salt-bush	Pinyon-Juniper	Fir-Pine	Cone Pine	Bristle- Pseudo-Alpine
desert cottontail	X	X	X	X	X		
whitetail antelope squirrel	X	X	X	X	X		
cliff chipmunk		X		X	X	X	
Merriam kangaroo rat	X	X	X	X			
deer mouse	X	X	X	X	X	X	X
desert wood rat	X	X	X	X	X		
coyote	X	X	X	X	X	X	
grey fox	X	X	X	X	X	X	
kit fox	X	X	X	X			
bobcat	X	X	X	X	X	X	
mountain lion		X		X	X	X	
badger	X	X	X	X	X		
mule deer		X		X	X	X	
bighorn sheep	X	X	X	X	X	X	X
BIRDS:							
turkey vulture	X	X	X	X	X	X	X
red-tailed hawk	X	X	X	X	X	X	
prairie falcon	X				X		
mourning dove	X			X			
roadrunner	X	X	X	X			
great horned owl				X	X		
lesser nighthawk	X	X	X				
broad-tailed hummingbird				X	X	X	
western kingbird	X						
horned lark	X						
violet-green swallow					X	X	
pinyon jay				X	X		
mountain chickadee				X	X	X	
bushtit	X	X		X	X		
white-breasted nuthatch					X		
rock wren	X	X		X	X	X	
northern mockingbird		X					
cedar waxwing				X			
loggerhead shrike		X					
phainopepla	X			X			
yellow-rumped warbler					X	X	
western tanager				X	X		
black-headed grosbeak				X	X		
white-crowned sparrow				X	X		
house finch	X	X		X			

The interrelationships in desert ecosystems are fragile and complex because of the extremes and variability of temperature and precipitation. For example, because of unpredictable moisture, many desert plants grow slowly compared to plants in more moist environments, and as a result plant communities recover slowly from disturbance. Sources of free water also play an extraordinarily important role in desert ecosystems. While many species such as reptiles have adapted to require little or no free water, others including most birds and large mammals are totally dependent on the springs and other water developments on the Range for survival during dry periods. Riparian vegetation near the springs also provides cover and feeding habitat that concentrates many birds and mammals.

3.5 HUMAN FACTORS

3.5.1 CULTURAL RESOURCES

Cultural resources refer to artifacts, sites, and landscapes that contain information about past humans and their environment. Cultural resources also include Native American sacred and traditional values that are embodied by specific places in the landscape. Archaeological, historical, and traditional Native American sites are subtle, fragile, and non-renewable resources. This section presents a basic inventory of the kinds of cultural resource sites currently documented on the Range. A summary of the culture history of the area now occupied by the Range is presented in Appendix C.

The Cultural Resource Data Base. The Nevada Archaeological Survey and University of Nevada, Las Vegas were contracted to assemble all data on archaeological sites, locations, forms, and reports that exist for the Range. These data have been summarized in a computer database and are kept on file at Range headquarters in Las Vegas, and in the USFWS Regional Office in Portland, Oregon. In an effort to protect cultural resources from looters, site locations are exempt from the Freedom of Information Act.

Although only a small fraction of the Range has been surveyed for cultural resource sites, a total of 321 sites have been recorded. All but three are prehistoric archaeological sites. Two hundred sites occur on the portion of the Range overlaid by the Nellis Bombing Range (outside the proposed mineral withdrawal) because activities of the Air Force stimulated cultural resource surveys of a few specific areas. The distribution of known archaeological sites reflects only the areas that archaeologists have surveyed, and not necessarily the actual distribution of sites across the landscape. Although the Service does not have an full picture of the cultural resources on the Range, the known sites provide a clue to the nature of cultural resources.

Archaeologists have assigned various labels to the sites on the Range. Some labels imply how the site functioned. The site labels are probably, but not necessarily, consistent between the numerous archaeologists who documented the sites. Other site types certainly exist on the Range, but the places harboring such sites have yet to be investigated. Site types currently recognized on the Range are listed and described below. Figure 3-15 displays the relative frequency of each.

A lithic scatter is an assortment of stone tools and discarded stone debris. Flaked stone artifacts dominate the site, but grinding stones and hearth rocks also occur. Many, but not all, lithic scatters are confined to the surface. As a generic, catch-all term, lithic scatter does not connote a specific activity. Large (4-hectare (10-acre)) and small (10 square meters) lithic scatters provide evidence of a variety of events. A lithic scatter could be the remains of a single event, such as the place where a small hunting party processed their kill. Or, a lithic scatter might represent numerous events where the remains of a few thousand years are mixed together at the surface.

A campsite is a large lithic scatter with a diverse array of tools and features. These sites were intensively used by aboriginal people. Campsites may have buried deposits.

Hearth refers to a isolated fire hearth, roasting (mescal) pit, or similar cooking feature whose size or excellent preservation overshadows other stone artifacts that may be present.

Milling station is a lithic scatter dominated by seed grinding tools and fragments thereof.

Rockshelter (including cave) is self-explanatory. Rockshelters often contain perishable artifacts of wood, fiber, and bone, in addition to stone artifacts and debris. Some rockshelters on the Range also contain rock art.

Rock art refers to images pecked or painted onto boulders, canyon walls, or overhangs.

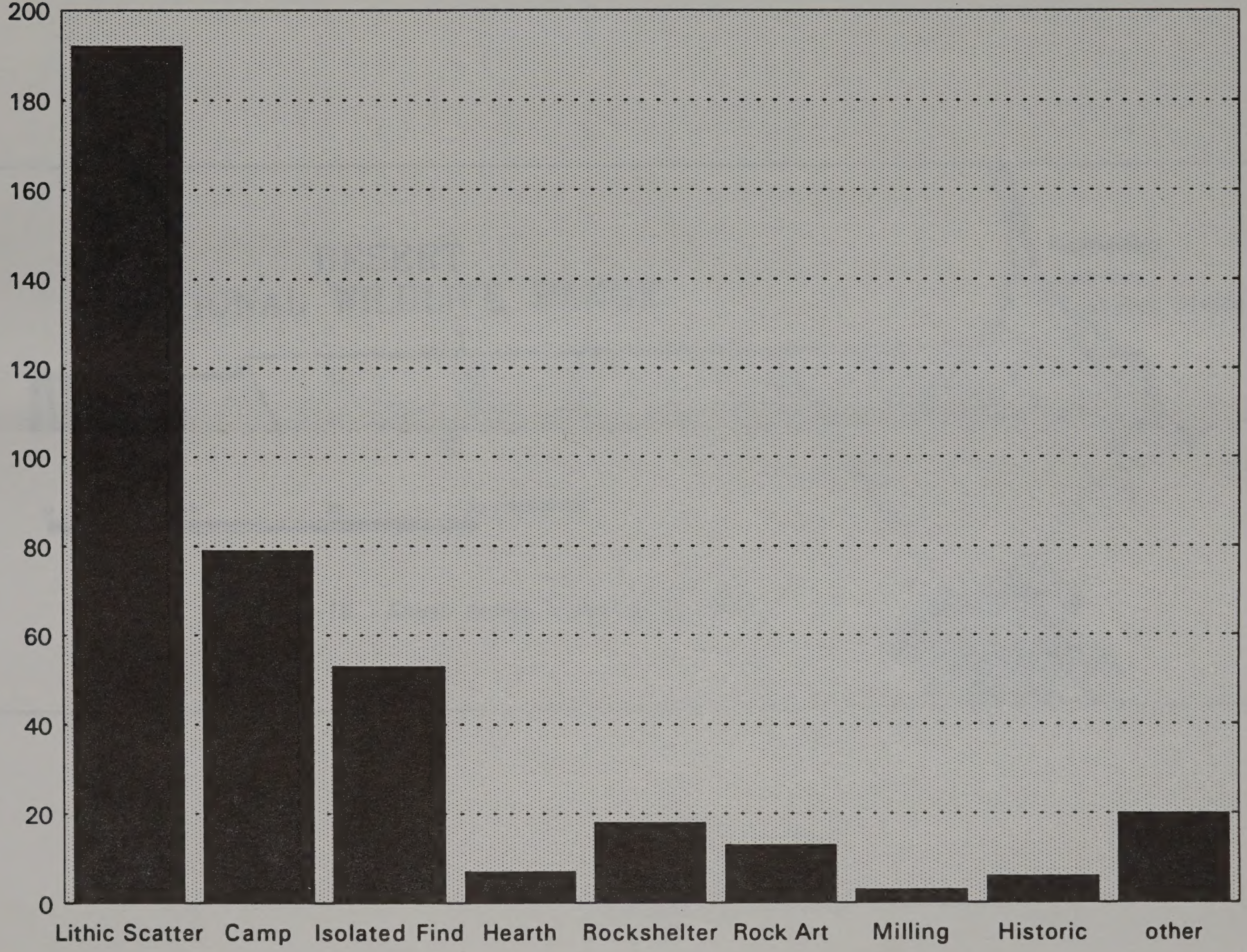
Isolated find is variously defined as a site in which the total artifact count is between 1 and 10. Isolated finds occur in isolation from other archaeological material.

Historic site is a structure or location built or modified by Euro-Americans. Corrals, cabins and mining features are common historic sites on the Range, but only a few have been recorded.

Desert National Wildlife Refuge certainly contains other archaeological sites than those described above. Nearby on the Nevada Test Site, Pippin (1986) has documented site types that probably occur on the Range. These include pinyon caches where the aboriginal people built facilities to store pinyon nuts. Hunting blinds are rock (and occasionally brush) alignments which once concealed hunters waiting to ambush bighorn sheep or mule deer. Cleared ground sites are places where rocks have been moved and arranged to support a now disintegrated timber and brush superstructure over clean floor. These features may be associated with campsites discussed above. Windbreaks and wickiups are places where aboriginal people had piled and/or modified brush and trees to provide shelter at temporary camps. Ancient and traditional Native American spiritual sites probably occur on the Range, although we have no data to predict their appearance or location.

Figure 3-15.

Frequency of recorded site types on Desert National Wildlife Range



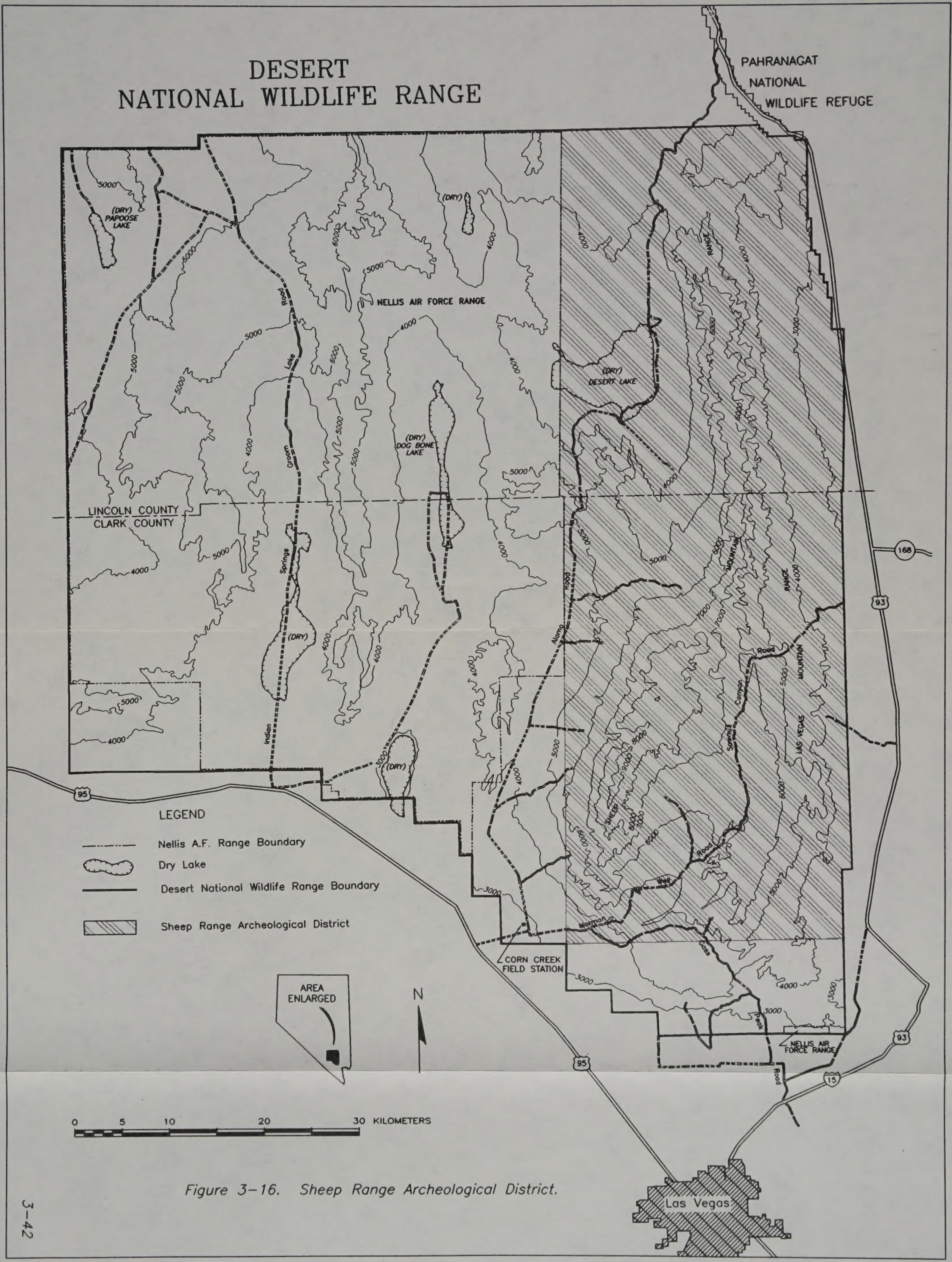

DESERT
NATIONAL WILDLIFE RANGE
PAHRANAGAT
NATIONAL
WILDLIFE REFUGE
(DRY) PAPOOSE LAKE
(DRY)
NELLIS AIR FORCE RANGE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
(DRY)
(DRY)
LINCOLN COUNTY
CLARK COUNTY
Groom Lake Road
Indian Springs
Alamo
SHEEP RANGE
LAS VEGAS MOUNTAIN RANGE
MOUNTAIN
Sawmill Canyon Road
Mormon Well Road
Gass Peak Road
CORN CREEK FIELD STATION
NELLIS AIR FORCE RANGE
168
93
95
15
Las Vegas
3000
4000
5000
6000
7000
8000
9000
LEGEND
Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
▨ Sheep Range Archeological District
AREA ENLARGED
N
0
5
10
20
30 KILOMETERS

Figure 3–16. Sheep Range Archeological District.

Several sites on Desert National Wildlife Refuge are listed on the National Register of Historic Places. These are briefly discussed below:

Sheep Mountain Archaeological District. The Sheep Mountain Archaeological District was nominated by the Service for the National Register of Historic Places in 1974 and accepted for listing the same year. The 622,080-acre district covers 80 percent of that part of the Range that is not overlaid by the Nellis Bombing Range (Figure 3-16). No formal archaeological survey or investigation has been accomplished for the District, although a few sites have been recorded. Refuge personnel have noted additional sites, but most of these have yet to be formally recorded. Sites in the District include pinyon nut camps, mescal pits, rock art, hunting blinds, springside encampments, and historic sites. Listing of the Sheep Mountain Archaeological District was a recognition that the Range contains a rich cultural record.

Due to the remote and protected status of the Range, many sites in the District have escaped damage from development or looting. Until archaeological evaluation determines otherwise, all recorded and unrecorded sites within the District are considered listed on the National Register of Historic Places.

Corn Creek Springs 26Ck2605. Corn Creek is an historic and prehistoric site covering some 1,280 acres on the south end of the Range. The site consists of springmounds and dunes dotted with mesquite. Human occupation of the site has been radiocarbon-dated at 5,000 years ago, but Native Americans used the place consistently up to Euro-American contact. A ranch and stage stop was established by 1900, and two buildings, the blacksmith shop and mesquite house, were built in the 19th century. The Service acquired the site in 1939, and the Civilian Conservation Corps operated out of Corn Creek for a year thereafter. Foundations of their structures remain onsite as well. Corn Creek is the field headquarters for the Range.

Hidden Forest Cabin 26Ck2606. Hidden Forest Cabin is located high in the Sheep Mountains, sheltered by towering ponderosa pines. Its exact construction date is unknown, but it is probably the work of a late 19th or early 20th century miner or cattleman. The hand hewn lumber construction and isolated location embodies the self reliance and endurance of the first Euro-Americans to penetrate Nevada's backcountry.

Mormon Well Corral 26Ck2608. Mormon Well Corral is a circular structure of standing juniper tree posts woven together with barbed wire. It was built in the late 1800s when cattlemen and settlers began to cross the Sheep Mountains in large numbers. The 4-acre site includes the corral, Mormon Well spring, and prehistoric and historic archaeological material.

3.5.2 SOCIAL AND ECONOMIC CONDITIONS

Because of the manner in which data are organized and made available, the affected social and economic environment are defined to include all of Clark and Lincoln Counties.

Population and Area. Table 3-7 displays 1980 and 1990 decennial population benchmarks and population forecasts for the year 1995 for the two counties and the State. Clark County, with an estimated population of 741,459 in 1990, has 61.7 percent of the State's total population (1,201,833) and has been experiencing phenomenal growth. In the second quarter of 1990, the Nevada Employment Security Department reported an estimated 5,000 people moving into the area each month.

Population density in Clark County, encompassing a land area of 7,910.7 square miles, is estimated at 93.7 persons per square mile. Clark County is characterized by a highly developed urban area within the Las Vegas Valley, where the majority of the population resides. The balance of the county is sparsely populated and is similar in character to Lincoln County.

Table 3-7. Affected Area Population and Projections.

LOCATION	1980	1990	% Change 1980 - 1990	1995 Forecast
Clark County	463,087	741,459	60.1	1,013,020
Lincoln County	3,732	3,775	1.2	5,140
State of Nevada	800,508	1,201,833	50.1	1,581,540

Sources: 1980 and 1990 U.S. Department of Commerce, Bureau of the Census; 1995 Preliminary Forecast, Department of Administration, State of Nevada, 3/21/90.

Lincoln County, the third largest county in the state, is rural and sparsely populated. With a total area of 10,634.7 square miles, and a population of only 3,775 persons, population density for Lincoln County is about 1 person per 2.5 square miles. The rate of growth for population in the county, at 1.2 percent over the last decade, is the lowest in the state. A majority of the county's population (1,111 persons) resides in the city of Caliente; with most of the balance in the communities of Alamo, Pioche, and Panaca.

Income and Employment. Tables 3-8 and 3-9 show earnings and employment in 1989 by major industries for both counties. Service industries are the single most important employers and income producers for the two counties, with Federal and State Government providing the second largest source of income for both counties as well. The predominance of service industries is explained primarily by gaming industry employment in Clark County. Civilian employment by private firms providing contractual services to the Nevada Test Site and other Department of Defense activities explains the high incidence of service industry income and employment in Lincoln County.

Unemployment rates reported by county for May 1991 were 6.0 percent for Clark County and 5.3 percent for Lincoln County. The Nevada State average was 5.8 percent at that time. Rates reported for May 1992 show unemployment continuing at 6.0 percent for Clark County, and dropping to 4.3 percent for Lincoln County, with a Nevada State average stable at 5.8 percent. However, the number of persons employed increased by an estimated 13,300 persons in Clark County during the same period of time. This increase in employment, with an unchanged unemployment rate, may therefore reflect a continuing expansion in population and the labor force in Clark County.

Total employment in Lincoln County actually declined during this same period, from 1,980 jobs in May, 1991, to 1,850 jobs in May, 1992--a loss of 130 jobs. However, the total labor force also declined from 2,090 persons to 1,930 persons, which explains the decline in the unemployment rate. More people left the labor force than those who lost jobs. In this case, then, the decline in the unemployment rate reflects a contracting rather than an expanding economy.

Table 3-8. 1989 Earnings* by Major Industry, Clark and Lincoln Counties. ($000)

INDUSTRY	CLARK	PERCENT	LINCOLN	PERCENT
Agriculture	5,212	0.1	934	1.6
Mining	24,345	0.3	573	1.0
Construction	1,041,313	11.2	973	1.7
Manufacturing	280,129	3.0	**	
Wholesale Trade	366,285	3.9	93	0.2
Retail Trade	961,991	10.4	2,104	3.7
Services	4,202,918	45.3	38,967	67.8
Government	1,283,728	13.8	11,387	19.8
Other	1,118,331	12.0	2,438	4.2
TOTAL	9,284,252	100.0	57,469	100.0

(Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, April 1991.)

* Earnings include wages and salaries, other labor income, and proprietor income. Earnings represent the principal component of total income which is further comprised of dividends, interest, rent, and transfer payments, less personal contributions for social insurance.

** Not shown to avoid disclosure of confidential information. Figures are included in "Other."

Annual per capita income figures for 1990 show Clark ($18,508) and Lincoln ($15,845) Counties to be below the average of $18,989 for the State's 17 counties. Clark ranks 8th in the state, in county per capita income, and Lincoln is 15th.

Social Setting, Attitude, and Values. An analysis of social attitudes, expectations, and lifestyles was conducted for the Final Environmental Statement for the Proposed Public Land Withdrawal, Nellis Air Force Bombing Range, Nye, Clark and Lincoln Counties, Nevada (USAF 1981). Additional Social-Economic Profiles have been prepared by BLM, and from these sources it may be concluded that the majority of both urban and rural residents are pleased with their communities and lifestyles. Rural residents are, however, less tolerant of outside influence in their lives.

Residents strongly value quality educational opportunities for their children, family life, friendship, personal honesty, and trust. In rural areas, personal independence, responsibility, and self-reliance are particularly prized virtues. Economic development, industrial growth, and community expansion are favored, while personal status and environmental concerns receive less emphasis.

Table 3-9. Clark and Lincoln Counties, 1989; Employment by Major Industries

INDUSTRY	CLARK	PERCENT	LINCOLN	PERCENT
Agriculture	389	0.1	148	6.4
Mining	421	0.1	32	1.4
Construction	35,128	8.7	26	1.1
Manufacturing	10,538	2.6	*	
Wholesale Trade	12,544	3.1	*	
Retail Trade	64,786	16.0	233	10.1
Services	182,315	45.0	1,208	52.2
Government	48,570	12.0	518	22.4
Other	50,393	12.4	148	6.4
TOTAL	405,084	100.0	2,313	100.0

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, April 1991.

* Less than 10 jobs. Estimates are included in "Other."

Positive community attributes include such factors as: (1) a good place to raise a family; (2) recreational opportunities; and (3) the quality of the physical environment. Air pollution and traffic congestion are perceived as negative influences by urban residents, while the lack of adequate hospital and medical care are the principal concerns of the rural area inhabitants.

The Federal Government represents a significant presence in these two counties, as illustrated by land ownership data. Almost 96 percent of the land area in both counties (approximately 4,950,000 acres in Clark, and 6,500,000 acres in Lincoln) are under Federal ownership. The Nellis Air Force Base and Range and the Nevada Test Site represent the most visible presence of Federal Government in the two counties. Local resident interest and concern is also directed toward Federal management of the lands for mining, livestock grazing, wildlife and wild horse management, wilderness, land tenure, and utility corridors.

Income and employment opportunities afforded by the military presence are generally perceived as favorable, even necessary. Concern about aircraft noise, sonic booms, range contamination from unexploded ordnance, radioactivity, seismicity, and potential range fires has been expressed by residents of the study area. A full discussion of these concerns may be found in the Final Environmental Statement, Proposed Public Land Withdrawal, Nellis Air Force Bombing Range (USDI, BLM 1981).

Residents of Lincoln County and the rural areas of Clark County express strong interest in mining, livestock grazing, wild horse management, and wilderness issues. Wildlife and land tenure (particularly lands available for community expansion and utility corridors) have proven, in the past, to generate concern in both urban and rural areas throughout the counties.

Affected Sectors. Other than the military presence on the Nellis Air Force Range and the management of the Desert National Wildlife Range by the U.S. Fish and Wildlife Service, there is very little economic activity within the lands proposed for withdrawal that generates income or employment. There is no livestock grazing on the Range, and no forest or vegetative products are sold.

Recreation - Most of the Range has been recommended for Wilderness designation, and is currently being managed as such. Recreation consists mostly of local-area visitation to developed sites such as Corn Creek Station, which has a kiosk, ponds, and an interpretive trail. There is no off-road vehicle use, and no dispersed recreation. There is a limited amount of hunting in the fall, mostly for bighorn sheep. About 300 visitor days occur for bighorn sheep hunting, with most non-resident hunters hiring guides. It is estimated that about $45,000 are spent in the local area, annually, for bighorn sheep hunting. There is very little deer hunting because of the low deer population.

Mining - There is no minerals exploration or development occurring, and no valid mining claims are known to exist. Though of relatively small incidence in both counties, mining is of more economic importance in Lincoln County because of its much smaller economic base and a more noticeable multiplier effect on employment and income.

For Clark County, mining produced $24,345,000 in personal income in 1989 and provided 421 jobs. This represents only 0.3 percent of total county personal income, and 0.1 percent of total county employment. For Lincoln County, mining generated income of only $573,000, and provided only 32 jobs in 1989. This represented 1.0 percent of total county income, and 1.4 percent of the jobs.

Assessed valuation for net proceeds of mines for 1988-1989 amounted to $6.5 million in Clark County and $242,000 in Lincoln County. Assessed value of mining property totaled $13.8 million in Clark County and $1.6 million in Lincoln County. Taken together, these assessments yielded $406,000 in tax revenues for Clark County, and $31,000 for Lincoln County.

3.5.3 RECREATION

Most of the Range has been recommended for wilderness designation, and is currently managed to preserve wilderness values. The recommended wilderness is roadless, natural in condition, and possesses outstanding opportunities for solitude and primitive recreation in a harsh desert environment immediately adjacent to metropolitan Las Vegas.

Recreation that is compatible with and/or related to wildlife is permitted and encouraged on the Range. A majority of recreational visits are day use. Public use for the period 1986-1990 is estimated at 13,300 people annually. Hiking, wildlife observation, driving for pleasure, picnicking, and photography are the most popular activities. The most popular attractions on the refuge are Corn Creek Field Station, Hidden Forest in the Sheep Mountain Range, the ponderosa pine forest at Mormon Well Pass, and Fossil Ridge in the Las Vegas Mountain Range. An interpretive kiosk and 400-meter(1/4-mile) self-guided interpretive trail at Corn Creek introduce visitors to the Range and its resources, including bighorn sheep, birds, and the endangered Pahrump poolfish. Mormom Well Road offers a 75-kilometer (47-mile) self-guided interpretive auto tour with stops keyed to messages in the refuge brochure. The road traverses all the common vegetation zones on the range.

Hiking, Horseback Riding, Camping, and Backpacking. Roadside camping is permitted year-round along any of the roads that are open to vehicle travel. Backpacking and horsepacking are permitted year-round. The most popular areas are Hidden Forest and Sawmill Canyons, both of which are about eight kilometers (five miles) long and terminate at springs located in coniferous forests. Opportunities to observe wildlife are good at these springs. Camping is prohibited within 400 meters (1/4 mile) or within sight of any waterhole or spring.

The Alamo and Mormon Well Roads provide year-round access for most types of conventional highway vehicles. A few primitive spur roads permit seasonal four-wheel drive access to remote areas that would seldom be visited otherwise due to scarcity of water and the rigors of foot travel in desert country.

Hunting. The hunting program is coordinated with Nevada Department of Wildlife. Desert bighorn have been hunted annually on the refuge since 1957 under a permit system. Hunting regulations emphasize a quality experience. Most sheep hunters want to take larger and older rams, regardless of the definition of a legal ram, and are willing to spend the extra time in the field to accomplish their goal. The largest desert bighorn ram ever harvested in Nevada was taken from Gass Peak in the southeastern section of the Range in 1982.

The refuge initiated its first deer hunt in 1989. Twenty buck-only tags for mule deer are issued for the Las Vegas, Sheep, and East Desert Mountain Ranges for a 10-day season. Most hunters are looking for a trophy class deer.

Wildlife Observation. Bighorn sheep are difficult to observe because they blend extremely well with their surroundings and, except during watering periods, are widely dispersed in small groups. Nearly every desert bighorn hunting tag holder has at least two companions. These companions spend more time watching sheep than any other visitor group. Non-hunters can view sheep by visiting a traditional watering location at the right time of day. Bird watchers concentrate their time at Corn Creek Field Station where the deciduous trees and spring-fed ponds attract a wide variety of perching birds.

3.5.4 RESEARCH NATURAL AREAS

Four of the refuge's five Research Natural Areas are located within the boundaries of the proposed withdrawal (figure 3-17).

Name	Primary Type	Acres
Basin	Interior Ponderosa Pine	650
Hayford Peak	Bristlecone Pine	2,000
Deadhorse	Grama-Galleta Steppe	3,000
Pinyon-Juniper	Pinyon-Juniper	500

Research Natural Areas are managed to preserve natural features with as little disturbance as possible for scientific and educational purposes. They serve as a baseline for comparison with areas influenced by human activity, as sites for ecological and environmental study, and as reserves to protect gene pools for typical and rare organisms.

3.5.6 VISUAL RESOURCES

Most of the Range is a pristine example of a desert wilderness. Steep and generally bare mountainsides, bedrock canyons, dry lake bottoms, rolling hills, and escarpments combine to present a desert view which has changed minimally from pre-settlement times.

Description of the visual resource is based on an inventory of three landscape features: (1) vegetation; (2) land and water surface; and (3) structures. The following describes these features for the Range.

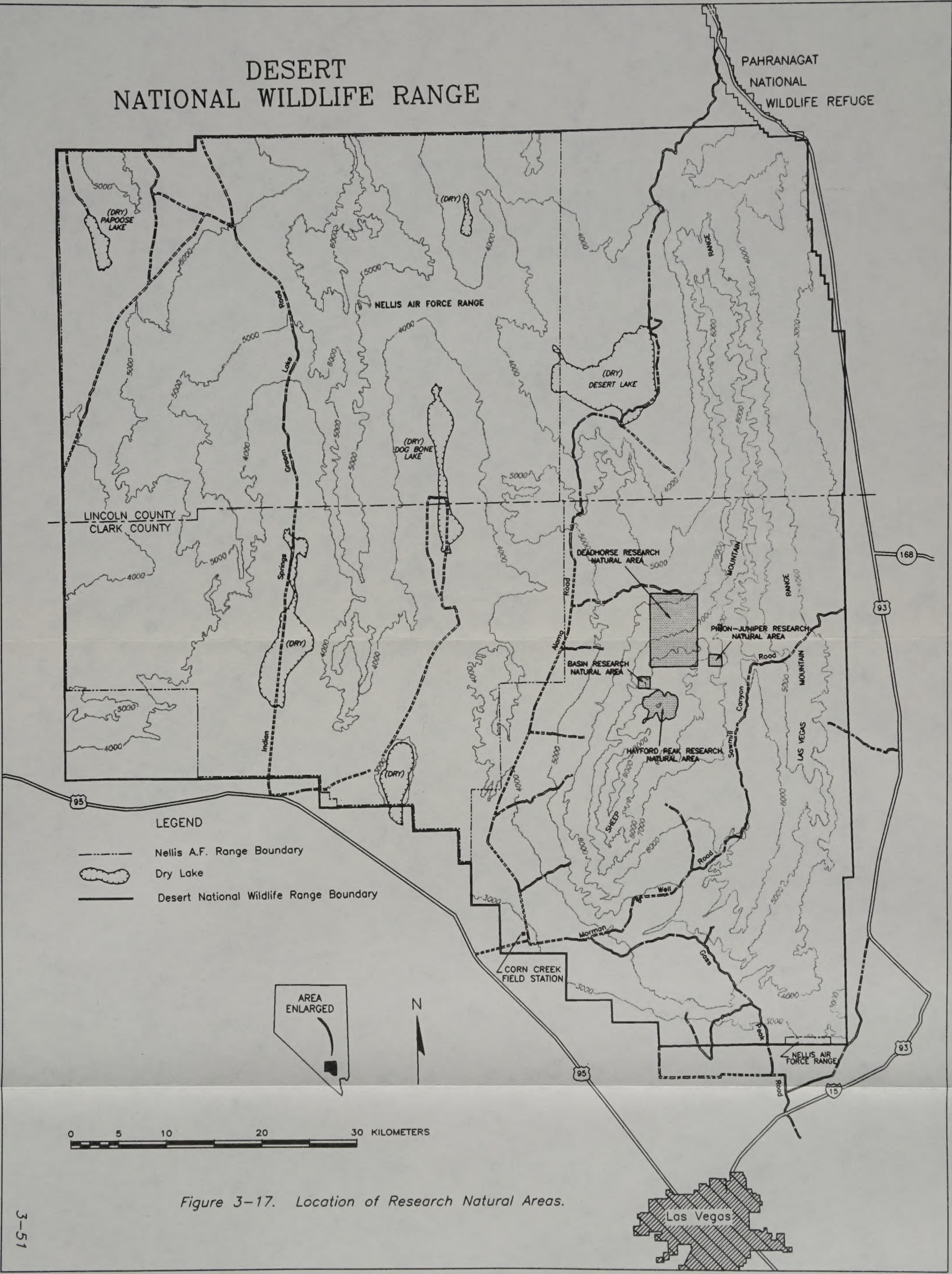
Vegetation: Vegetation varies from low-growing, widely-scattered desert shrubs at lower elevations to a well-developed coniferous forest at the upper elevations. Vegetative zones change according to elevation, and six distinct plant communities are recognizable. Forests are not extensive, but represent a pleasant contrast to the desert shrubs of the foothills and valley floor. Valley vegetation varies from saltbush, creosote bush, and mesquite to blackbrush, yucca, and Joshua tree forests in the foothills to pinion-juniper, mountain mahogany/ponderosa pine and fir, and bristlecone pine in the higher elevations.

Land and Water Surface: The Range features five mountain ranges running generally north-south with desert valleys between. The Sheep Range, the highest and most impressive mountain range, includes Hayford Peak, which is 3,021 meters (9,912 feet) above sea level. Topography varies from flat, dry, lake bottoms to steep, jagged cliffs in the escarpments, canyons, and mountain tops. A unique topographical feature, visible from the Mormon Well Road, is a large hole at the top of the southeast canyon wall from which "Peek-a-boo Canyon" derives its name.

There are no permanent streams, ponds, or marshes on the Range, except at the Corn Creek Headquarters. The dry lakes occasionally collect runoff water during wet years, but remain wet for only a few weeks. No water features are visible from the major highways.

Structures: The only structures visible from highways adjacent to the Range are the Corn Creek Headquarters buildings and police radio facilities on Gass Peak. Although Corn Creek serves as the management focus of the Range, it blends into the landscape as a typical ranch/homestead clustered within an overstory of shade trees. Significant structures which are visible or easily accessible from the Mormon Well Road include an agave roasting pit and the Mormon Well Corral, which is listed in the National Register of Historic Places.

In summary, the Desert National Wildlife Range is essentially an undisturbed visual resource with diverse topography and vegetation. The desert landscape exhibits a unique blend of rugged landforms and subtle colors on a grand scale.


DESERT
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PAHRANAGAT
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NELLIS AIR FORCE RANGE
(DRY) DESERT LAKE
(DRY) DOG BONE LAKE
LINCOLN COUNTY
CLARK COUNTY
Indian Springs Road
Lake
(DRY)
(DRY)
DEADHORSE RESEARCH NATURAL AREA
PIÑON-JUNIPER RESEARCH NATURAL AREA
BASIN RESEARCH NATURAL AREA
HAYFORD PEAK RESEARCH NATURAL AREA
Alamo Road
Sawmill Canyon Road
SHEEP
MOUNTAIN
RANGE
LAS VEGAS
MOUNTAIN
RANGE
Mormon Well Road
Gass Peak Road
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NELLIS AIR FORCE RANGE
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LEGEND
Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
AREA ENLARGED
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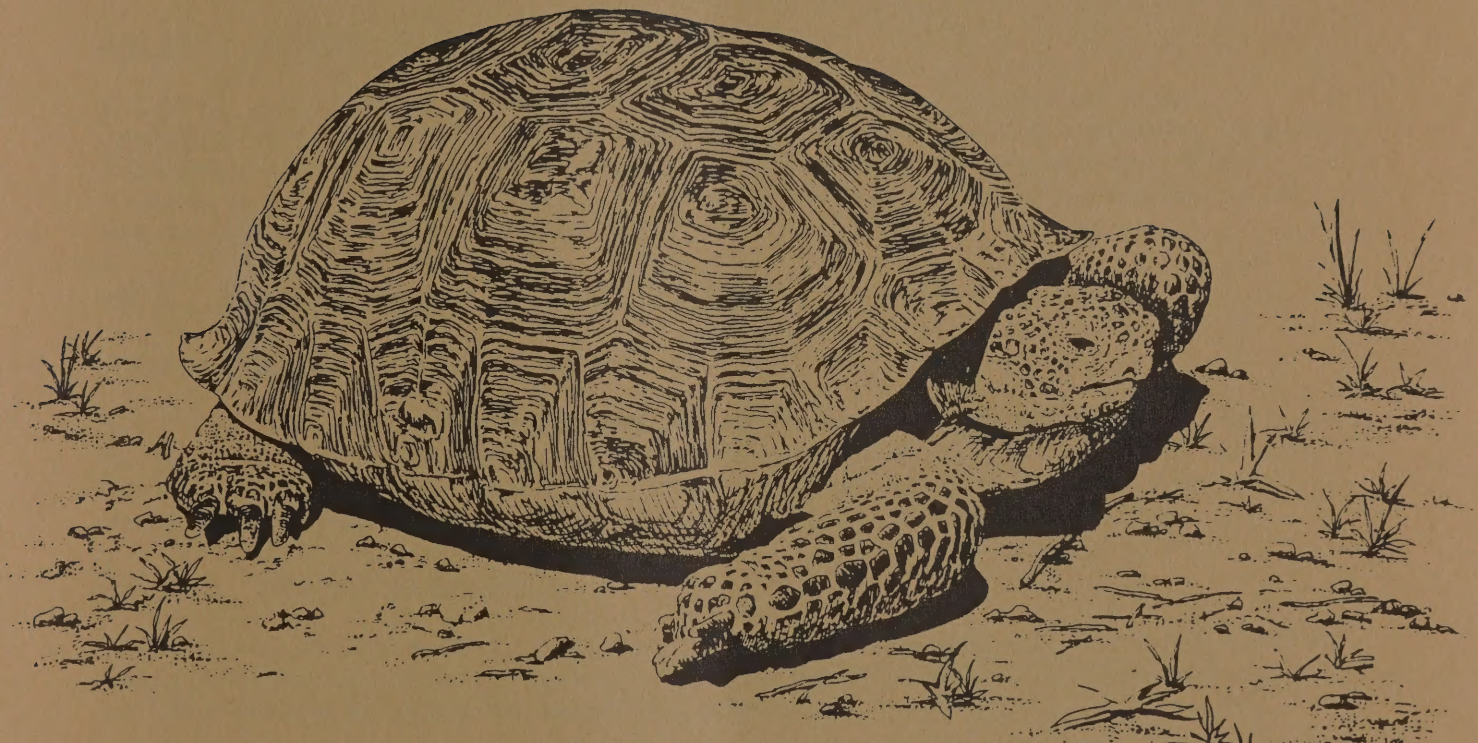
Figure 3–17. Location of Research Natural Areas.

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES



CHAPTER FOUR
4.0 ENVIRONMENTAL CONSEQUENCES

This chapter discusses the potential consequences or impacts of each of the alternative actions described in chapter Two on the issues identified in Chapter One. A comparison of consequences between alternatives is also provided to summarize the chapter.

4A CONSEQUENCES OF IMPLEMENTING ALTERNATIVE A: WILDLIFE RANGE WITHDRAWAL

4A.1 IMPACTS TO PHYSICAL FACTORS

4A.1.1 MINERAL DEPOSITS

Alternative A would be a continuation of a closure to all mineral entry activities. There would be no filing of mining claims, and all existing minerals would remain in place for future consideration when the 20-year withdrawal expired. There would be no adverse impacts to mineral resources of the Range.

4A.1.2 GROUND WATER AND SPRINGS

Existing ground water resources would continue to be unaffected from a protected environment. Existing springs and other water developments would continue to benefit wildlife, especially desert bighorn sheep, and other mammals and birds. There would be no adverse impacts to water resources of the Range as a result of Alternative A.

4A.2 IMPACTS TO BIOLOGICAL FACTORS

4A.2.1 DESERT BIGHORN SHEEP

All individual animals and populations of desert bighorn sheep would continue to benefit from maintenance and protection of relatively undisturbed natural habitat conditions on the Range. Desert bighorn sheep would benefit as a result of implementation of Alternative A, Wildlife Range Withdrawal.

4A.2.2 DESERT TORTOISES

All desert tortoises would continue to benefit from protected natural habitat conditions on the Range. Desert tortoises would benefit from implementation of Alternative A, Wildlife Range withdrawal.

4A.2.3 CANDIDATE THREATENED OR ENDANGERED SPECIES

All individuals and populations of candidate species would continue to benefit from maintenance and protection of undisturbed natural habitat conditions on the Range. Alternative A, Wildlife Range Withdrawal, would benefit candidate threatened and endangered plant and animal species

4A.2.3 DESERT ECOSYSTEM/ BIOLOGICAL DIVERSITY

All existing soils, plant communities, and other important wildlife habitat features such as springs and riparian habitat would continue to benefit wildlife. All biological communities would continue to benefit from maintenance and protection of undisturbed conditions on the Range. The high species diversity and undisturbed condition of the Range's desert/ mountain ecosystem would be maintained if Alternative A was implemented.

4A.3 IMPACTS TO HUMAN FACTORS

4A.3.1 CULTURAL RESOURCES

All archaeological and historical sites would continue to be maintained in their existing condition. Cultural resources would continue undisturbed as a result of implementation of Alternative A, Wildlife Range Withdrawal.

4A.3.2 LOCAL AND REGIONAL ECONOMY

The closure of the Range to locatable mineral exploration and development would preclude the potential for exploitation of existing industrial limestone deposits. This would represent an economic opportunity foregone, with loss of potential income and employment from the limestone mine that is projected to occur without the withdrawal. The limestone mine would result in an annual increase to Clark County income of $2.57 million (see section 4B2.3.2). However, this potential economic benefit represents less than 3/100ths of 1 percent of the existing Clark County income of over $9 billion annually, and is not considered significant.

Alternative sources of industrial limestone in the Las Vegas area (Tingley, et.al. 1993) could be developed if mineral resources on the Range were withdrawn and demand was sufficient. This would be likely to yield economic benefits comparable to those foregone by the loss of a potential mine within the Range. Also, the economic potential of the industrial limestone deposits on the Range would again become available for consideration and evaluation at the end of the 20-year withdrawal period.

Existing uses would be continued as described in Section 3.5.2 of this EIS. No significant economic impacts are expected as a result of Alternative A.

4A.3.3 WILDLIFE-RELATED RECREATION

Alternative A would preserve current opportunities for wildlands viewing, wildlife observation, hiking, hunting, horseback riding, backpacking, and camping in an undisturbed natural environment. Wildlife-related recreation would be unaffected by Alternative A, Wildlife Range Withdrawal.

4A.3.4 VISUAL RESOURCES

The pristine desert view would be protected and maintained in its relatively natural condition. The visual resources of the Range would continue unaffected by Alternative A.

4A.4 SUMMARY - IMPACTS OF ALTERNATIVE A

Ground water and springs, desert bighorn sheep, desert tortoises, the desert ecosystem and its plants and wildlife, cultural resources, wildlife-related recreation, and visual resources would all continue to benefit from the withdrawal and the undisturbed natural environment that it would maintain. Opportunities for economic development of limestone deposits would be foregone, but there would be no significant economic impact to the local or regional economy. Alternative sources of industrial limestone are available in the Las Vegas area. Existing mineral reserves would be maintained in place for future consideration when the withdrawal expired.

Implementation of Alternative A, Wildlife Range Withdrawal (the proposed action), would reinstate and maintain an existing closure to entry for locatable minerals on the Range and thereby prevent activities that would be incompatible with the purposes and objectives for which the Range was established. The overall impact of Alternative A would be beneficial.

4B CONSEQUENCES OF IMPLEMENTING ALTERNATIVE B: NO ACTION

4B.1 IMPACTS TO PHYSICAL FACTORS

4B.1.1 MINERAL DEPOSITS

For the first eight years, there would be no significant depletion of mineral deposits. After wilderness constraints were removed, a minor depletion of high calcium and cement grade limestone reserves would occur at the "June Bug" mine site in the Gass Peak area. The volume of mineral extraction is described under section 4B.3.2 (impacts to economy). There would also be some removal of rock samples at each of the Notice locations and the Plan location at the "Lake" mine site in the northeastern Sheep Range.

A modest depletion of limestone deposits would occur as a result of Alternative B.

4B.1.2 GROUND WATER AND SPRINGS

The location of the projected limestone mine on the south side of Gass Peak is in an area of Paleozoic carbonate rocks (specifically the Bird Spring Formation and the Sultan Limestone) and Quaternary alluvium (Longwell 1965). Both of the carbonate rock formations are capable of transmitting water through deep fractures, local brecciations, and solution openings. The beds in this area are arched into a west-trending anticline which disappears into alluvium. A syncline and anticline immediately to the south and southeast continue the bed deformations (Longwell 1965). Although the proposed mine is in an area of carbonate rock capable of transmitting water, the area's intense deformation probably creates barriers to significant southern groundwater flows off Gass Peak. Therefore, the mine itself would probably have little impact to the Range's groundwater resources.

The projected water diversion requirement for the limestone mine would be met either by a well on-site or slightly off-site, or by supplies from the city of Las Vegas. An on-site or slightly off-site production well would be situated at the southern end of the Range, and inferring from Harrill (1988) appears to be immediately up-gradient to where groundwater flows off the Range. Given the inferred direction of groundwater flow, it is most likely that the well would not intercept water currently flowing to any of the Range's known springs. The springs closest to the site, Upper and Lower White Blotch, Gass, and White Spot, emanate from the Tertiary Horse Spring Formation on the northern slopes of Gass Peak. These springs are north of the Gass Peak thrust, and most likely would not be affected. Corn Creek Springs and the springs' contributing fault system are further to the northeast and also most likely would not be affected.

The "Lake" mine site in the northeast Sheep Range where a Plan of Operation is projected is in basin fill and not immediately near any significant surface water source. It is, however, two to three miles up-gradient from the Pahranagat National Wildlife Refuge's Lower Pahranagat and Maynard Lakes. Shallow surface disturbance at this site could intercept shallow groundwater flows through the alluvium to the Pahranagat Valley. This would affect only a very small proportion of the lakes' inflows, as most of the water contributed to Lower Pahranagat and Maynard lakes is from upstream carbonate-rock regional springs (Ash, Hiko, and Crystal). Surface disturbance of the area's fine-grained valley deposits could increase the movement of sediment to the lake area.

Surface disturbances at the 22 Notice locations could potentially affect small mountain springs and water developments that are in the immediate proximity of the developed sites. The use of earth-moving equipment and explosives could disrupt subsurface flow paths or degrade water quality. There is also a minor potential that casual prospecting with hand equipment near any of the springs or other water sources on the Range could disrupt spring flows or degrade water quality.

Alternative B could result in significant adverse impacts to water quantity and quality at springs on the Range as a result of prospecting with mechanized equipment and explosives at Notice locations.

4B.2 IMPACTS TO BIOLOGICAL FACTORS

4B.2.1 DESERT BIGHORN SHEEP

The mining operation at the "June Bug" site in the southern Las Vegas Range, would displace bighorns from the site and the surrounding habitat while the mine was in operation. An estimated 50 bighorns could be displaced from seasonally crucial habitat by this mine.

Sixteen of the 22 Notice sites are adjacent to precipitous slopes occupied by bighorns. Service helicopter surveys have documented that bighorns occasionally feed on alluvial fans, foothills and washes near their escape habitat on steep slopes. Small quantities of forage would be lost at these sites, but temporary displacement of bighorns would be most detrimental if it occurred during the lambing season. Service helicopter surveys have documented that the bighorn population has recently shown a downward trend, with the sharpest declines occurring on the Sheep Mountain Range. Disruption of lambing may delay the recovery of the Sheep Range subpopulation.

Alternative B will result in adverse impacts to desert bighorn sheep by displacing 50 bighorns from seasonally crucial habitat and by disrupting lambing in some locations. Recovery of the population to pre-drought levels would be delayed.

4B.2.2 DESERT TORTOISES

Eleven of the 22 Notices sites, the "June Bug" and "Lake" mine sites, and an estimated 25 miles of off-road vehicle access are within the range of the tortoise. Consequently, a minimum of 114 hectares (282 acres) of possible tortoise habitat would be cleared of vegetation for prospecting, mining operations, and off-road access. Given the low density tortoise population (approximately 1 tortoise per 20 acres of suitable habitat), there is a potential that habitat for 14 tortoises could be destroyed by these activities.

Completion of tortoise surveys and protection/mitigation plans would be required before the Plans of Operations could be approved. Loss of tortoises on the lime mine site would likely be prevented by stipulations of the approved operation plan, but the habitat and its carrying capacity would be destroyed. An undetermined number of tortoises would also be lost due to casual prospecting, prospecting at notices, and being run over by vehicle traffic to the mine.

Desert tortoises, a threatened species, could be adversely impacted by exploration and mining under alternative B. Habitat for up to 14 tortoises could be destroyed.

4B.2.3 CANDIDATE THREATENED AND ENDANGERED SPECIES

No candidate threatened or endangered plant species would be disturbed at the "June Bug" and "Lake" mine sites. The Service would require surveys and mitigating measures to protect any plants found before approving Plans of Operations.

Mechanized prospecting at the Notice sites would provide the Service 15 days advance notice of operations. However, it is unlikely that this short period would be adequate to allow surveys before operations began. Also, since regulations do not provide a dependable mechanism for protecting endangered species in advance of operations even if they are known to be present, there is a potential for loss of candidate plants at Notice sites.

Casual prospecting at other sites on the Range would also have a distinct, but unquantifiable, potential for inadvertent destruction of individuals or populations of candidate plants. While surface disturbance that is "not substantially noticeable" would not be expected to create significant impacts to dominant or common plant species, the destruction of a single individual or small population of some candidate plant species could be adverse. The potential for destruction of candidate plants cannot be quantified, in part because the entire Range has not been surveyed for the plants. More importantly, the Service would not be able to protect sites even if they were known because it would have no prior knowledge of, or control over, the location of prospecting sites.

Based on available distribution information for the candidate plants, the greatest concern would be for the white bear desert poppy, Sheep Mountain milkvetch, sheep fleabane, rosy bicolor penstemon, and mound ground-daisy. The penstemon would be most vulnerable to disturbance since they have been found in small numbers in only three localities in the southern Las Vegas Mountain Range.

The distribution of candidate threatened or endangered animals is not fully known. The chuckawalla and loggerhead shrike are candidate animals that are likely to be affected by the lime mine, casual prospecting, and prospecting at Notices under this alternative. Both of these species occur in the desert shrub habitat type where most exploration would occur. Shrikes and chuckawallas on disturbed habitat would be displaced, and the overall carrying capacity of their habitat would be diminished.

Alternative B could result in adverse impacts to individuals or populations of candidate plants, especially during casual prospecting. Adverse impacts are also likely to the chuckawalla and loggerhead shrike.

4B.2.4 DESERT ECOSYSTEM/ BIOLOGICAL DIVERSITY

Surface disturbance would be relatively minor while wilderness constraints were in effect. However, when wilderness constraints were removed, soils would be disturbed and vegetation would be destroyed on a minimum of 145 hectares (360 acres) by mine development, prospecting, and off-road access. Most of the projected developments, prospecting, and access would take place in the desert shrub vegetative zone, and a large proportion of destroyed vegetation would be of the desert shrub vegetative type.

Much of this disturbance would be involved with the construction and use of a lime mine at the former "June Bug" mine site in the southern Las Vegas Range. The plant at this mine would occupy 53 hectares (130 acres), and the quarry would cover approximately 28 hectares (70 acres). Most surface disturbance would be eventually reclaimed, but any existing topsoil and vegetation at the quarry would probably be permanently displaced because reclamation does not usually require refilling of large quarries.

A total of 46 hectares (115 acres) of surface disturbance would occur as a result of mechanized prospecting at other sites on the Range. This would include up to 2 hectares (5 acres) at the Plan of Operation at the "Lake" mine site in the northeastern Sheep Range and at each of the 22 locations identified in figure 27 where Notices would be filed. Most soil displacement would eventually be replaced, but mature plant communities would not be restored for several decades.

Some disturbance of soils and vegetation, mostly the desert shrub type, would occur from use of hand equipment for casual prospecting at 20 other unidentified sites, but this disturbance would be relatively insignificant compared to the disturbance caused by mechanized prospecting.

Creation of access to all the mineral development and prospecting sites discussed above would cause disturbance of soils and destruction of vegetation. Surface disturbance would occur on an estimated total of 18 hectares (45 acres) as a result of vehicles traveling off existing roads. This estimate is derived from a projection of 25 linear miles of access road (50 permits at 1/2 mile per road) 15 feet wide.

The long-term loss of 145 hectares (360 acres) of vegetation represents a loss of habitat for a wide variety of species. The extreme conditions in desert ecosystems provide little unused carrying capacity to absorb animals displaced from their home range. The desert shrub community will be the primary type affected, and a majority of common reptiles (side-blotched lizard, zebra-tailed lizard, and western whiptail lizard) depend on this habitat type. Most individuals will be displaced where exploration and mining with mechanized equipment takes place, and this habitat destruction would represent a small but long-term decrease in the Range's carrying capacity.

Birds of many species depend on the desert shrub plant community for migration and winter habitat (table 2-6), and many, such as the roadrunner, cactus wren, Le Conte's thrasher, and black-throated sparrow, reside almost exclusively in this habitat type Destruction of vegetation and disturbance from workers and equipment would cause displacement of birds from plant communities surrounding all exploration sites. Where mechanized equipment was used, there would be a long-term loss of cover, feeding, and nesting habitat, and a corresponding decrease in the avian population the area could support.

In the area surrounding the mining operations at the "June Bug" mine site in the southern Las Vegas Range, there would be long-term displacement of birds. The only species that would be unaffected at the mine and mill site would be the most tolerant varieties like starlings and house sparrows. Bird diversity and density would decline at and adjacent to mining operations due to suppression of nesting success.

The loss of more than 80 hectares (200 acres) of habitat due to plant, quarry, road, and utility construction would also affect other mammal populations. Those species with the smallest home ranges and least mobility (i.e., kangaroo rats, pocket gophers and cottontail rabbits) would be permanently displaced. Larger, carnivorous mammals would lose part of their prey base. All mammals would have a higher mortality rate due to the likelihood of being struck by vehicles.

The presence of workers and equipment noise at the Notice sites would temporarily displace more mobile large mammals (foxes, coyotes, etc.) in the surrounding plant communities. Six of the Notice sites are near wildlife water developments (Quail Spring, Wamp Spring, Cabin Spring, Rug Mountain Catchment, Lower Deadman Spring, and Joe May Guzzler). Temporary disturbances to bighorn, mule deer, and other mammals that are highly dependent on these water sources would temporarily deprive them of these water sources, and could cause short-term population declines.

Under alternative B, the relatively undisturbed nature of the Range, and the nearly natural ecosystem it has preserved, would be seriously disrupted by human activities. These activities would preclude optimum function of crucial wildlife-habitat relationships, (i.e., undisturbed use of riparian habitat and water provided by springs, and undisturbed use of bighorn lambing habitat) and are therefore incompatible with the purposes of the Range.

4B.3 IMPACTS TO HUMAN FACTORS

4B.3.1 CULTURAL RESOURCES

Cultural resources would be inventoried and evaluated as part of the approval process for the Plans of Operation at the "June Bug" or "Lake" mine sites. Impacts to significant sites would be mitigated according to section 106 of the National Historic Preservation Act. The Service would receive a 15-day notice before mechanized prospecting commenced at the 22 Notice sites, but there is a distinct potential for inadvertent damage to cultural resources at these operations. It is unlikely that a 15-day notice would be adequate to allow cultural resource surveys before prospecting operations began. Anyone that damaged cultural resources while conducting mineral activity could be penalized under cultural resource protection laws, but there is little precedent in forcing compliance with cultural resource laws under the venue of a Notice.

Casual prospecting at other unidentified sites on the Range would also have a distinct, but unquantifiable, potential for inadvertent destruction of cultural sites. Much of the area that would be open for prospecting is within the Sheep Mountain Archaeological District. The potential for destruction of cultural sites cannot be quantified, in part because the entire Range has not been surveyed for cultural sites.

While surface disturbance that is "not substantially noticeable" would not be expected to create significant impacts to the general landscape or wilderness character, the destruction of a single cultural site could be significant and irretrievable if previously undocumented artifacts were affected. Cultural resources are typically located at or near the surface, and prospecting usually disturbs the surface. The Service would not be able to protect sites from casual prospecting even if they were known, because it would have no prior knowledge of, or control over, the location of prospecting sites.

Cultural sites would be likely to be adversely impacted by Alternative B, especially uncontrolled casual prospecting. Impacts would be mitigated at the projected limestone mine.

4B.3.2 LOCAL AND REGIONAL ECONOMY

Development of a limestone mining operation would commence at the "June Bug" mine site when wilderness constraints were removed by Congress. The direct and indirect income and employment, as well as the capital investment expenditures, which might result from the establishment of this mining operation, would represent a positive enhancement to the local economy of $2.57 million.

Mine development would begin with exploratory drilling that would last for 6 months to 1 year. Exploration would be likely to require 200 drill holes at an average depth of 300 feet. At an estimated contract cost of $30 per foot, total drilling costs would be $1.8 million. Since the driller and foreman are generally full-time company employees, only 3 or 4 additional temporary jobs would be created for exploration.

Costs for Assay are estimated at another $2 million. Assay work would create no new employment, but would provide additional work to sustain existing positions.

Design and construction of a new plant and mining site are estimated to require about 50 employees for 2 years. This phase would create an additional indirect employment of 10 persons in the trade and services sector, for a total of 60 new jobs throughout the two-year period. The indirect employment generated in the service sector during the construction phase is estimated using an employment multiplier of 1.2, which was developed from an economic analysis entitled, "The Economic Impact of Nevada's Mineral Industry" (Dobra 1988). Total costs to establish a new mining operation, including exploration, drilling, planning and design, site preparation, and construction are estimated at $50 million in capital expenditures. All of this work is usually performed by contractors.

Operations would commence, after construction, with about 30 employees. Life of the mine is estimated to be a minimum of 30 years. Using a minerals sector multiplier of 2.12 (Dobra 1988), indirect employment resulting from the 30 new mining jobs is estimated at 34 additional jobs in the trade and services industries. These additional jobs are stimulated by purchases of the mining company and its employees. A total of 64 new jobs, then, may be expected to be created in the Clark County economy.

With average mine worker wages in Nevada at approximately $33,300 per year (Nevada Employment Security Dept. 1989), total direct payrolls can be estimated at about $1 million, annually. This would provide an additional $1.57 million in indirect incomes throughout the local and regional economy (Dobra 1989) through wages, salaries, business profits, interest, and rents. On an annual basis, then, and as a result of this hypothetical mining operation, local area incomes may be seen to increase by a total of $2.57 million.

Within the mineral industry (tables 3-8 and 3-9), income and employment resulting from this projected mining operation would represent 4.1 percent of industry wages and salaries, and about 7.1 percent of industry employment.

However, the potential economic benefit of $2.57 million annually represents less than 3/100ths of 1 percent of the total Clark County income of more than $9 billion, and is not considered significant.

The Plan of Operations projected for the former "Lake" mine site in the northeastern Sheep Range is not expected to lead to economic mineral development. The existence of minerals has not been identified in sufficient quantity and quality for economic development. Other exploration activities undertaken through Notices, are also not expected to yield favorable economic results.

Alternative B would result in increases to the local economy of $2.57 million annually, but this would not represent a significant impact to the total Clark County income of $9 billion annually.

4B.3.3 WILDLIFE-RELATED RECREATION

Mining at the "June Bug" mine site on Gass Peak and prospecting at the "Lake" mine site in the northeast Sheep Range and the 22 identified Notice sites would create significant surface disturbance and visual impacts. These and other mining activities would reduce the opportunity for solitude and undisturbed recreation in the vicinity of mining activity.

Exploration and prospecting would increase vehicular traffic on the Range's single lane, gravel roads. In addition, visitors driving roads on the Range for pleasure or recreation would encounter heavier traffic. Disturbance and displacement of wildlife caused by exploration, prospecting, and mining could affect wildlife viewing and hunting opportunities.

Alternative B would have an adverse impact on the quality of recreational use of the Refuge, but no quantitative loss of use would be expected.

4B.3.4 VISUAL RESOURCES

Although reclamation is required, mining operations at the "June Bug" mine site on Gass Peak would permanently degrade the visual beauty of the desert landscape. Topographical disturbances, including the removal of landforms and vegetation, would have a significant and permanent visual impact on the natural environment of the Range. Any structures associated with the mining operations, but especially the strobe light on the stack, would be perceived as intrusions on the landscape and would result in additional negative visual impact until removed.

Under Alternative B, the limestone mine would create an adverse impact on the visual resources of the Range by creating unnatural intrusions on the landscape visible from the Las Vegas Valley.

4B.4 SUMMARY

Up to 50 desert bighorn sheep would be displaced from seasonally crucial habitat in the southern Las Vegas Range, and recovery of the bighorn population would be delayed. Vegetation would be destroyed and animals would be displaced from a minimum of 145 hectares (360 acres) of habitat, mostly the desert shrub community. While measurable population changes would not be expected for most species, the productivity and carrying capacity of the ecosystem would be reduced, and there would be losses to the Range's biological diversity near sites where habitat was destroyed. Small mammals, reptiles, and breeding birds would be the most vulnerable.

Potential habitat for 14 threatened desert tortoises would be destroyed and there is a potential that a few threatened desert tortoises would be lost. There could be inadvertent destruction of individuals or highly localized populations of candidate threatened or endangered plants. The carrying capacity for loggerhead shrikes and chuckawallas would be reduced.

A projected limestone mine in the southern Las Vegas Range would increase income in Clark County by $2.57 million annually. This potential economic benefit of $2.57 million represents less than 3/100ths of 1 percent of the total Clark County income of over $9 billion annually, and is not considered significant.

If alternative B was implemented, the relatively undisturbed nature of the Range, and the nearly natural habitat conditions it provides to wildlife, would be significantly disrupted by human activities. These activities would preclude optimum conditions for desert bighorn sheep, desert tortoises, candidate threatened and endangered species, the desert ecosystem, and wildlife-related recreation, and are therefore incompatible with the purposes of the Range. Inadvertent but irretrievable destruction of cultural sites would also be likely.

4C CONSEQUENCES OF IMPLEMENTING ALTERNATIVE C: LIMITED WITHDRAWAL

4C.1 IMPACTS TO PHYSICAL FACTORS

4C.1.1 MINERAL DEPOSITS

For the first 8 years, there would be no significant depletion of mineral deposits. At the end of 8 years, wilderness constraints would be removed, and effects on minerals would start to occur. These impacts would consist mainly of a reduction of high calcium and cement grade limestone reserves at the "June Bug" mine site in the Gass Peak area. The volume of mineral extraction is described in section 4C.3.2 (impacts to economy). There would also be some removal of rock samples at the 2 Notice locations.

Alternative C would result in a modest depletion of limestone deposits on the Range.

4C.1.2 GROUND WATER AND SPRINGS

The "June Bug" mine location that is projected for a limestone mine is in an area of Paleozoic carbonate rocks (specifically the Bird Spring Formation and the Sultan Limestone) and Quaternary alluvium (Longwell 1965). Both of the carbonate rock formations are capable of transmitting water through deep fractures, local brecciations, and solution openings. The beds in this area are arched into a west-trending anticline which disappears into alluvium. A syncline and anticline immediately to the south and southeast continue the bed deformations (Longwell 1965). Although the proposed mine is in an area of carbonate rock capable of transmitting water, the area's intense deformation probably creates barriers to significant southern groundwater flows off Gass Peak. Therefore, the mine itself would probably have little impact to the Range's groundwater resources.

The projected water diversion requirement for limestone mine would be met either by a well on-site or slightly off-site, or by supplies from the City of Las Vegas. An on-site or slightly off-site production well would be situated at the southern end of the Range and, inferring from Harrill (1988), appears to be immediately up-gradient to where groundwater flows off the Range. Given the inferred direction of groundwater flow, it is most likely that the well would not intercept water currently flowing to any of the Range's known springs. The springs closest to the site (Upper and Lower White Blotch, Gass, and White Spot) emanate from the Tertiary Horse Spring Formation on the northern slopes of Gass Peak. These springs are north of the Gass Peak thrust, and most likely would not be affected. Corn Creek Springs and the springs' contributing fault system are further to the northeast and also most likely would not be affected.

Surface disturbances at the Notice location near the northern boundary of the limited open area could potentially affect springs in the immediate proximity, including White Spot and Upper White Blotch. The use of earth-moving equipment or explosives could disrupt subsurface flow paths or degrade water quality. There is also a minor potential that casual prospecting with hand equipment near any of the springs or other water sources in the open area could disrupt spring flows or degrade water quality.

Alternative C could result in adverse impacts to water quantity and quality at springs in the limited open area of the Range as a result of prospecting with mechanized equipment and explosives at Notice locations.

4C.2 IMPACTS TO BIOLOGICAL FACTORS

4C.2.1 DESERT BIGHORN SHEEP

The mining operation at the "June Bug" site in the southern Las Vegas Range, would displace bighorns from the site and the surrounding habitat while the mine was in operation. An estimated 50 bighorns could be displaced from seasonally crucial habitat by this mine. This loss of habitat, especially during the lambing season, could forestall recovery of the bighorn population.

The presence of workers and equipment noise at the 2 Notice sites would temporarily displace bighorns from the sites and/or surrounding plant communities. Service helicopter surveys have documented that both Notice sites are adjacent to important bighorn seasonal habitat. Temporary displacement of bighorns would be most detrimental during the lambing season. One of the Notice sites is near the White Spot spring, an active water source.

Disturbance at this spring would deprive bighorns and other mammals of a crucial water source.

Alternative B will result in adverse impacts to desert bighorn sheep by displacing 50 bighorns from seasonally crucial habitat in the southern Las Vegas Mountains. Recovery of the population to pre-drought levels would be delayed.

4C.2.2 DESERT TORTOISES

The "June Bug" mine site, both Notice sites, and an estimated 5 miles of off-road access are within the tortoise's Range. Consequently, a minimum of 88 hectares (219 acres) of possible tortoise habitat could be eliminated by prospecting and mining operations. Given the low density tortoise population of approximately 1 tortoise per 20 acres of suitable habitat, there is a potential that habitat for 11 tortoises could be destroyed by these activities.

Completion of tortoise surveys and protection/mitigation plans would be required before the Plan of Operations could be approved. Loss of tortoises that were present on the lime mine site would likely be prevented by stipulations of the approved operation plan, but the habitat and its carrying capacity would be destroyed. An undetermined number of tortoises would also be lost due to casual prospecting, prospecting at notices, and being run over by vehicle traffic to the mine.

The desert tortoise could be adversely impacted by exploration and mining under alternative C2. Potential habitat for 11 tortoises would be destroyed by prospecting and mining activities.

4C.2.3 CANDIDATE THREATENED OR ENDANGERED SPECIES

Rosy bicolor penstemon, a candidate plant, is known to occur in the limited open area, but its distribution has not been mapped and the area has not been fully surveyed for other plants. Destruction of candidate threatened or endangered plant species would be unlikely at the "June Bug" mine site. The Service would require surveys and mitigating measures to protect any plants found before approving the Plan of Operation.

Mechanized prospecting at the 2 Notice sites would provide the Service a 15-day advance notice of operations. However, it is unlikely that this short period would be adequate to allow surveys before operations began. Also, since regulations do not provide a dependable mechanism for protecting endangered species in advance of operations even if they are known to be present, there is a potential for loss of candidate plants at Notice sites.

Casual prospecting at other sites in the limited entry area would also have a potential for inadvertent destruction of individuals or populations of candidate plants. The Service would not be able to protect sites even if they were known, because it would have no prior knowledge of, or control over, the location of prospecting sites.

The distribution of candidate threatened or endangered animals is not fully known. The chuckawalla and loggerhead shrike are candidate animals that are likely to be affected by the lime mine, casual prospecting, and prospecting at Notices under this alternative. Both of these species occur in the desert shrub habitat type where most exploration would occur. Shrikes and chuckawallas on disturbed acreages would be displaced, and the overall carrying capacity of their habitat would be diminished.

Candidate threatened or endangered plants and animals would be adversely impacted by Alternative C. Individuals or populations of candidate plants could be destroyed during casual prospecting, and chuckawallas and loggerhead shrikes would be displaced from mining and prospecting sites.

4C.2.4 DESERT ECOSYSTEM/ BIOLOGICAL DIVERSITY

Surface disturbance would be relatively minor while wilderness constraints were in effect. However, when wilderness constraints were removed, soils would be disturbed and vegetation would be destroyed on a minimum of 88 hectares (219 acres) by mine development, prospecting, and off-road access. Most of the projected developments and prospecting would take place in the desert shrub vegetative zone, and a large proportion of destroyed vegetation would be of the desert shrub vegetative type.

Most of this disturbance would be involved with the construction and use of a lime mine at the former "June Bug" mine site on the southern face of Gass Peak. The plant at this mine would occupy 53 hectares (130 acres), and the quarry would cover approximately 28 hectares (70 acres). Most surface disturbance would be eventually reclaimed, but any existing topsoil and vegetation at the quarry would probably be permanently displaced because reclamation does not usually require refilling of large quarries.

A minimum of 2 hectares (5 acres) of vegetation would also be disturbed or displaced by mechanized prospecting at 2 Notice sites in the open area. These sites would eventually be reclaimed, but regeneration of a mature plant community would take decades. Some disturbance of vegetation would also occur from use of hand equipment for casual prospecting at a few other unidentified sites, but this disturbance would be relatively insignificant compared to the disturbance caused by mechanized prospecting.

Creation of access to all the mineral development and prospecting sites discussed above would also cause disturbance of soils and destruction of vegetation. Surface disturbance would occur on an estimated total of 4 hectares (9 acres) as a result of vehicles traveling off existing roads. This estimate is derived from a projection of 5 linear miles of access road (10 permits at 1/2 mile per road) 15 feet wide.

The long-term loss of 88 hectares (219 acres) of vegetation represents a loss of habitat for a wide variety of species. The extreme conditions in desert ecosystems provide little unused carrying capacity to absorb animals displaced from their home range. The desert shrub community will be the primary type affected, and common reptiles (side-blotched lizard, zebra-tailed lizard, and western whiptail lizard) depend on this habitat type. Most individuals will be displaced semi-permanently where exploration and mining with mechanized equipment takes place, and this habitat destruction would represent long-term losses to the Range's carrying capacity.

Birds of many species depend on the desert shrub plant community for migration and winter habitat (table 2-6), and many (i.e., the roadrunner, cactus wren, Le Conte's thrasher, and black-throated sparrow) reside almost exclusively in this habitat type. Destruction of vegetation and disturbance by workers and equipment would cause displacement of birds from plant communities surrounding all exploration sites. Where mechanized equipment was used, there would be a long-term loss of cover, feeding, and nesting habitat, and a corresponding decrease in the avian population the area could support.

In the area surrounding the mining operations at the "June Bug" mine site in the southern Las Vegas Range, there would be long-term displacement of birds. The only species that would be unaffected by the mine would be the most tolerant varieties (i.e., starlings and house sparrows). Bird diversity and density would decline at and adjacent to the mining operation due to suppression of nesting success.

The loss of more than 80 hectares (200 acres) of habitat due to plant, quarry, road, and utility construction would also affect other mammal populations. Those species with the smallest home ranges and least mobility (i.e., kangaroo rats, pocket gophers and cottontail rabbits) would be permanently displaced. Larger, carnivorous mammals would lose part of their prey base.

The presence of workers and equipment noise at the 2 Notice sites would temporarily displace some of the more mobile large mammals such as bighorns, coyotes, and kit foxes from the sites and/or surrounding plant communities. Service helicopter surveys have documented that both Notice sites are adjacent to important bighorn seasonal habitat. Temporary displacement of bighorns would be most detrimental during the lambing season. One of the Notice sites is near the White Spot spring, an active water source. Disturbance at this spring would deprive bighorns and other mammals of a crucial water source.

Under alternative C, the relatively undisturbed nature of the limited entry area, and the nearly natural ecosystem it has preserved, would be adversely impacted by human activities. These activities would preclude optimum function of crucial wildlife-habitat relationships, (i.e., undisturbed use of bighorn lambing habitat, undisturbed use of riparian habitat and water provided by springs) and are therefore incompatible with the purposes of the Range.

4C.3 IMPACTS TO HUMAN FACTORS

4C.3.1 CULTURAL RESOURCES

Cultural resources would be inventoried and evaluated as part of the approval process for the Plan of Operation at the "June Bug" mine site. Impacts to significant sites would be mitigated according to section 106 of the National Historic Preservation Act. Mechanized prospecting at 2 Notice sites would provide the Service a 15-day advance notice of operations, but there is a distinct potential for inadvertent damage to cultural resources at these operations. It is unlikely that a 15-day notice would be adequate to allow cultural resource surveys before prospecting operations began. Anyone that damaged cultural resources while conducting mineral activity could be penalized under cultural resource protection laws, but there is little precedent in forcing compliance with cultural resource laws under the venue of a Notice.

Casual prospecting at other unidentified sites in the mineral entry area would also have a potential for inadvertent destruction of cultural sites. Most of the area that would be open for mineral entry is not within the Sheep Mountain Archaeological District, but the area has not been fully surveyed and there is a potential for cultural sites. The Service would not be able to protect sites from casual prospecting even if they were known, because it would have no prior knowledge of, or control over, the location of prospecting sites.

Cultural sites could be adversely impacted by Alternative C, especially uncontrolled casual prospecting. Impacts would be mitigated at the projected limestone mine.

4C.3.2 LOCAL AND REGIONAL ECONOMY

Development of a limestone mining operation would commence at the "June Bug" mine site when wilderness constraints were removed by Congress. The direct and indirect income and employment, as well as the capital investment expenditures, which might result from the establishment of this mining operation, would represent a positive enhancement to the local economy.

Mine development and operation would be projected to occur as described in section 4B.3.2. A total of 64 new jobs would be expected to be created in Clark County. This would result in a total increase of $2.57 million to area incomes annually.

Income and employment resulting from this potential mining operation would represent increases of 4.1 percent of mining industry wages and salaries, and about 7.1 percent of industry employment (tables 2-8 and 2-9). However, the potential economic benefit of $2.57 million represents less than 3/100ths of 1 percent of the total Clark County income of over $9 billion annually, and is not considered significant.

4C.3.3 WILDLIFE-RELATED RECREATION

Mining at the "June Bug" mine site on Gass Peak and prospecting at the 2 identified Notice sites would reduce the opportunity for solitude and recreation in the vicinity of mining activity.

Exploration and prospecting would increase vehicular traffic on the Range's single-lane, gravel roads within the limited entry area. In addition, visitors driving the Range's roads for pleasure or recreation would encounter heavier traffic. Disturbance and displacement of wildlife caused by exploration, prospecting, and mining could affect wildlife viewing and hunting opportunities.

Alternative C would have an adverse impact on the quality of recreational use of the Range, but no quantitative loss of use would be expected.

4C.3.4 VISUAL RESOURCES

Although reclamation is required, mining operations at the "June Bug" mine site on Gass Peak would permanently degrade the visual beauty of the desert landscape. Topographical disturbances, including the removal of landforms and vegetation, will have a significant and permanent visual impact on the natural environment of the Range. Any structures associated with the mining operations, but especially the strobe light on the stack, will be perceived as intrusions on the landscape and will result in additional negative visual impact until removed.

Alternative C would have an adverse impact on the quality of recreational use of the Refuge, but no quantitative loss of use would be expected.

4C.4 SUMMARY

Up to 50 desert bighorn sheep would be displaced from seasonally crucial habitat in the southern Las Vegas Range, and recovery of the bighorn population would be delayed. Vegetation would be destroyed and animals would be displaced from a minimum of 88 hectares (219 acres) of habitat, mostly the desert shrub community. While measurable population changes would not be expected for most species, the productivity and carrying capacity of the ecosystem would be reduced and there would be losses to the Range's biological diversity where habitat was destroyed. Small mammals, reptiles, and breeding birds would be the most vulnerable. There is also a potential that a small number of threatened desert tortoises would be lost, and that the carrying capacity for loggerhead shrikes and chuckawallas would be reduced.

A projected lime mine in the southern Las Vegas Range would increase income in Clark County by $2.57 million annually. This potential income represents less than 3/100ths of 1 percent of the total Clark County income of over $9 billion annually, and is not be considered significant.

If alternative C was implemented, the relatively undisturbed nature of the limited open part of the Range, and the nearly natural habitat conditions it provides to wildlife, would be adversely impacted by human activities. These activities would preclude optimum conditions for desert bighorn sheep, desert tortoises, candidate threatened and endangered species, and the desert ecosystem, and are therefore incompatible with the purposes of the Range.

4.1 UNAVOIDABLE ADVERSE IMPACTS

All adverse impacts are unavoidable since all feasible mitigating measures are integrated into the alternative actions.

For Alternative B, adverse impacts include disturbance of soils, vegetation, and wildlife on and around a minimum of 145 hectares at the limestone mine, prospect sites, and off-road access areas throughout the proposed withdrawal area; displacement of 50 bighorn sheep from seasonal range and delay in recovery of their population; loss of potential habitat for 14 desert tortoises and potential loss of candidate plants and animals; and a strong potential for inadvertent destruction of cultural sites.

For Alternative C, adverse impacts include disturbance of soils, vegetation, and wildlife on and around a minimum of 88 hectares at the limestone mine, prospect sites, and off-road access areas in the limited entry area; displacement of 50 bighorn sheep from seasonal range and delay in recovery of their population; loss of potential habitat for 11 desert tortoises and potential loss of candidate plants and animals; and a slight potential for inadvertent destruction of cultural sites.

4.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

All mineral resources removed at the lime mine in Alternatives B and C would be an irretrievable commitment of a non-renewable resource. Each of the alternatives that provide at least some mineral entry have some potential to inadvertently destroy cultural resources or candidate plants. Any loss of cultural sites could be irreversible and irretrievable. Depending on the species, loss of individuals or populations of some plants could contribute to an irretrievable decline of the species.

4.3 SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

The action of withdrawing the Range from mineral entry is proposed with the specific intent of maintaining the long-term productivity of its biological resources. All of the alternatives except the proposed withdrawal would make short-term use of mineral deposits on the Range at the expense of long-term productivity of the Range's biological resources.

4.4 ENVIRONMENTAL COMMITMENTS

For each alternative, the description of the action and the analysis of consequences assumes that all existing Federal, State, and local laws and regulations would be met and that all required permits and mitigating measures would be integrated. The proposed withdrawal is based on the Service's commitment to provide optimum protection to the Range's biological and cultural resources.

4.5 CUMULATIVE IMPACTS

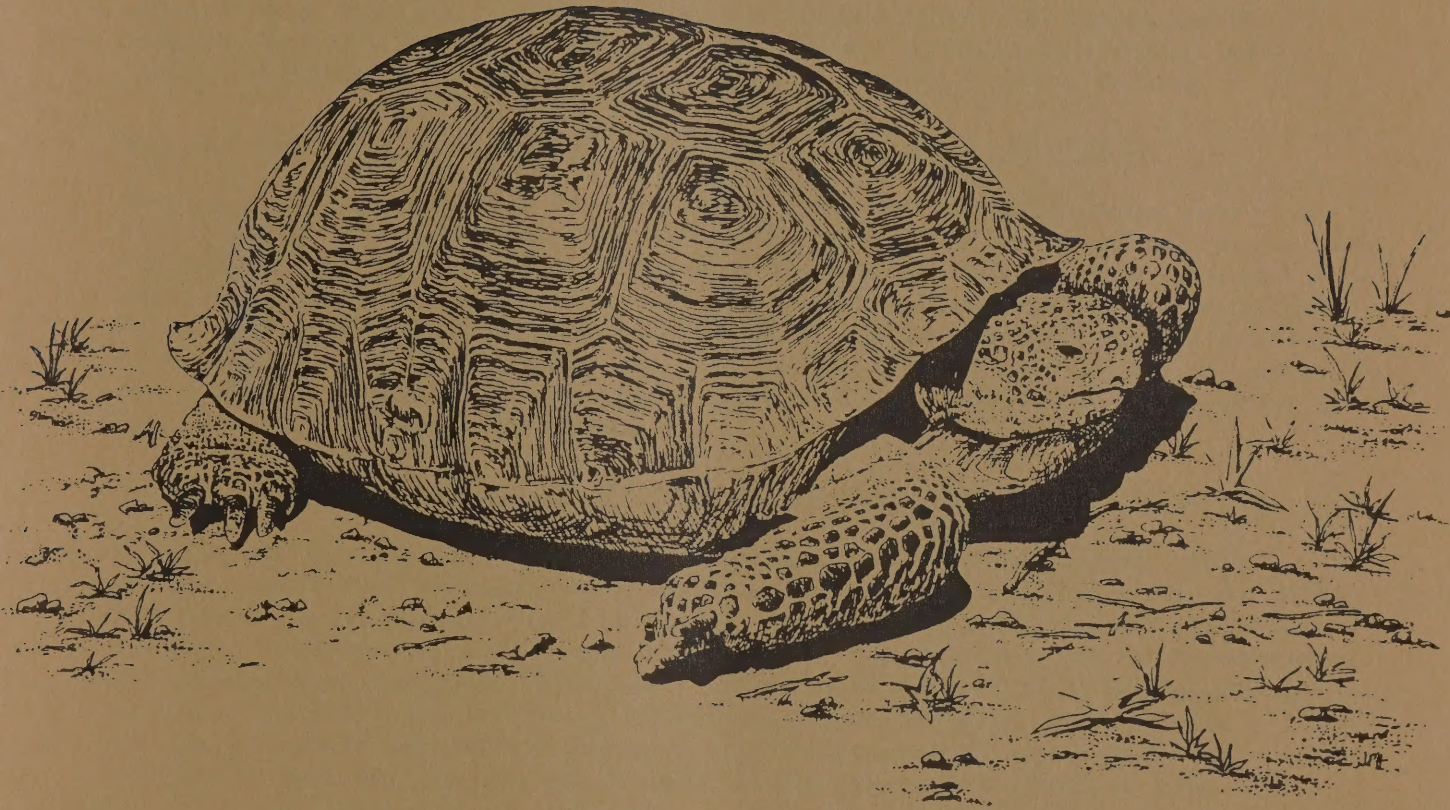
Cumulative impacts are defined as impacts on the environment that result when an individual action is added to other similar past, present, and reasonably foreseeable future actions. Cumulative actions result from individual actions that might be collectively significant. For this EIS, cumulative impacts are defined as significant impacts that would occur as a result of the proposed withdrawal or any of the alternatives in combination with other actions in the past, present, or during the 20-year term of the proposed withdrawal.

The mineral assessment (Tingley 1993) identified no mineral resources in the proposed withdrawal area that were considered to be commercially exploitable at this time, but did find areas with a high potential for discovery of industrial minerals and base metals. Only the industrial minerals were considered to have sufficient demand to be economically feasible for development if located in sufficient quality and quantity by further exploration. The economic impact of withdrawing this mineral potential on the Range was not considered significant on its own because similar deposits are available for development elsewhere in the Las Vegas vicinity on public lands that are dedicated to multiple use. The proposed withdrawal would not be cumulatively significant because there are no known proposals to withdraw all the other available deposits during the 20-year term of the proposed withdrawal.

Allowing part of the Range to be opened to (not withdrawn from) mineral entry would be a cumulative adverse impact on the natural biological resources of southern Nevada, along with all other human uses of similar areas that did not protect them primarily for wildlife and its habitat. The Range is the only known remaining area with a functional natural ecosystem that ranges continuously from the low desert shrub community to the high altitude coniferous forest and pseudo-alpine community and has been dedicated and protected for wildlife in a relatively undisturbed condition. Any potential significant impacts to cultural resources would also be cumulative to other cultural resources that have been or will be destroyed in southern Nevada.

CHAPTER 5

CONSULTATION AND COORDINATION



CHAPTER FIVE
5.0 CONSULTATION AND COORDINATION

5.1 ENVIRONMENTAL REVIEW AND CONSULTATION

Withdrawal of unreserved mineral estate requires compliance with several Federal statutes in addition to the National Environmental Policy Act. The following acts provide the authority under which this action is proposed and/or require consultation or compliance.

5.1.1 FEDERAL LAND MANAGEMENT AND POLICY ACT (43 U.S.C. 1701)

This Act authorizes the Secretary of the Interior to make mineral withdrawals where existing resource uses are incompatible with a proposed use, but requires consultation with other Federal, State, and local government agencies and appropriate individuals and groups as part of the withdrawal process. The Act also requires a report to Congress which includes an explanation of the proposed use and alternatives, an inventory of natural resources including a mineral assessment, and an analysis of the effects of the withdrawal. The requirements for public participation and consultation and the report to Congress are met in full by this EIS and the associated coordination and public involvement described in Sections 5.1.5 and 5.2 which follow.

5.1.2 ENDANGERED SPECIES ACT (16 U.S.C. 1531 ET SEQ.)

Section 7 of this Act, and Service regulations (50 CFR 402), require a consultation to ensure that the Service's proposed action would not jeopardize the continued existence of endangered or threatened species. An internal Section 7 evaluation determined that the proposed withdrawal will not affect listed or candidate threatened or endangered species because it will continue an existing closure to mineral exploration and development. The evaluation and a list of endangered, threatened, and candidate species that may occur on the Range are shown in Appendix D.

5.1.3 NATIONAL HISTORIC PRESERVATION ACT (16 U.S.C. 470)

Section 106 of this Act requires Federal agencies to determine if their actions constitute an undertaking that may impact cultural resources eligible for the National Register of Historic Places, and to consult with the State Historic Preservation Office and the Advisory Council on Historic Preservation on appropriate protection measures. In consultation with the Nevada State Historic Preservation Office, the Service determined that the proposed withdrawal would not change previous land management at the Range, and therefore does not constitute an undertaking pursuant to Section 106.

5.1.4 NATIONAL WILDLIFE REFUGE SYSTEM ADMINISTRATION ACT OF 1966, AS AMENDED, (16 U.S.C. 668dd-668ee)

This Act and its amendments provide policy for management of all lands in the National Wildlife Refuge System. In particular, this Act supports the basis for the proposal to withdraw the locatable mineral estate where it provides that the Secretary may permit secondary uses of a National Wildlife Refuge only when such uses are compatible with the primary purposes for which the Refuge was created.

5.1.5 COORDINATION WITH FEDERAL, STATE AND LOCAL AGENCIES

This EIS is a cooperative project between the U.S. Fish and Wildlife Service as the lead agency, the U.S. Bureau of Land Management, and the U.S. Air Force. The Service's Refuge and Wildlife Program in the Pacific Regional Office, Portland, Oregon, is responsible for preparation of the EIS. The Desert National Wildlife Refuge Complex located in Las Vegas, Nevada, administers the Range (except for the unreserved mineral estate), and members of the Complex staff were important contributors to the EIS. The Service's Ecological Services Program, Reno Field Office, provided the Endangered Species list and concurred in the Section 7 evaluation.

The BLM administers the unreserved locatable mineral estate on the Range. BLM staff from the Nevada State Office in Reno and the Las Vegas District Office provided guidance on the mineral withdrawal process, and were important contributors to the EIS.

The Air Force has a secondary withdrawal to use a portion of the Range as a bombing range. The Environmental Management Office at Nellis Air Force Base participated in scoping and review of the EIS.

The Service, BLM, and Air Force have coordinated closely with the Nevada Department of Wildlife, Nevada Department of Minerals, and Nevada Bureau of Mines and Geology on this EIS. The Nevada Department of Minerals was especially helpful by participating in scoping meetings, providing a tour of operating mines in the Las Vegas vicinity, and providing a mailing list of interested mineral industry representatives. The Nevada Bureau of Mines and Geology contracted with the Service to complete the mineral assessment summarized in Chapter Two of the EIS, and participated in several scoping meetings.

5.2 PUBLIC INVOLVEMENT

A Notice of Intent to prepare an EIS on the proposed mineral withdrawal at the Desert National Wildlife Range, Lincoln and Clark Counties, Nevada, was published in the Federal Register on January 16, 1992. The Notice of Intent announced that the public comment period associated with the scoping process would be open from February 1, 1992 through March 15, 1992. It was also announced that public scoping meetings would be held on the EIS on February 25, 1992, in Las Vegas, Nevada and on February 27, 1992, in Alamo, Nevada.

On January 16, 1992, a letter was sent to all Federal, State, and County elected officials that represent Clark and Lincoln Counties, Nevada; pertinent local, State, and Federal agencies; and an extensive list of interested organizations and individuals (see section 5.3). The letter notified all recipients of the proposed withdrawal and announced the public scoping meetings referenced above.

On February 10, 1992, a news release was sent to 13 statewide and local news outlets announcing the withdrawal proposal, the EIS process, and the opportunity to provide comments on the scope of the EIS. Prior to the public meetings a fact sheet was developed to provide a summary of the proposal to all who attended the public meetings and to anyone requesting more information by telephone or mail.

On February 25, 1992, and February 27, 1992, public scoping meetings were held in Las Vegas and Alamo, Nevada. A total of 11 people attended these meetings including one newspaper reporter, and a total of 5 pertinent comments or concerns were expressed. Also, a total of five letters were received in response to the Notice of Intent and the notification letter.

In December 1992 an update was sent to the mailing list to notify all concerned of a delay in the EIS because of a delay in availability of conclusive information from the mineral assessment. This update also included scoping information for the EIS that was current at that time (see appendix E).

On July 9, 1993, the Draft EIS, Mineral Withdrawal, Desert National Wildlife Range, was filed with the U.S. Environmental Protection Agency. Also on that date, a Notice of Availability was published in the Federal Register. Copies of the Draft EIS were mailed to agencies and individuals listed in section 5.4 prior to the official filing date. Additional copies were made available to local public libraries, and a news release was given to all local news outlets. The cover page on the Draft EIS, the news release, and other announcements of availability all included instructions for providing comments and a person to contact for further information. The official comment period extended from July 9, 1993 through September 7, 1993. All comments received through October 3, 1993 are included in Section 5.3

5.3 RESPONSES TO COMMENTS RECEIVED ON THE DRAFT EIS

The following agencies, organizations, and individuals provided written comments on the Draft Environmental Impact Statement.

Federal agencies

- U.S. Environmental Protection Agency

State Agencies

- Nevada Department of Conservation and Natural Resources
  - Division of Environmental Protection
  - Division of State Lands
  - Division of Historic Preservation and Archeology
  - Division of State Lands
- Nevada Department of Wildlife
- Nevada Department of Minerals

Organizations

- Desert Bighorn Council
- Defenders of Wildlife

The Wilderness Society, National Headquarters and the National Audubon Society
The Wilderness Society, California/Nevada Regional Office
The Desert Protective Council, Inc.

Individuals

Kenneth M. Reim

COMMENTS AND RESPONSES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

August 23, 1993

RECEI
AUG 25 1993
USF&WS REALTY
PORTLAND, OR 97232

Mark Strong
Desert Mineral Withdrawal EIS
U.S. Fish and Wildlife Service
911 N. E. 11th Ave.
Portland, OR 97232-4181

Dear Mr. Strong:

The Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the project entitled **Mineral Withdrawal: Desert National Wildlife Range.** Our review is provided pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations [40 CFR Parts 1500-1508] and Section 309 of the Clean Air Act.

The Fish and Wildlife Service (Service) proposes to withdraw a portion of the Desert National Wildlife Range (Range) from entry for mineral development under terms of the Mining Law of 1872. The EIS provides an assessment of the effects of the following three alternative proposals for withdrawal or exploration and development of minerals on the Range: (1) Wildlife Range Withdrawal; (2) No Action; and (3) Limited Entry.

Based on our overall review, we have assigned the DEIS a rating of **LO (Lack of Objections).** EPA supports Service policies to protect ecosystems and conserve biological diversity by addressing activities that are incompatible with the purposes of Wildlife Refuges. EPA commends the Service for its analysis of the possible impacts to endangered and threatened species from mining activities.

We suggest, however, that the FEIS include some additional analysis regarding air quality and comparison of alternatives. Under Chapter 3, Environmental Consequences, there is no discussion of air quality. Given that the Las Vegas air basin is not in attainment for PM10 and that the mining activities in alternatives 2 and 3 will produce additional particulates, we suggest the EIS include discussion of any incremental impacts to the air basin regarding particulate matter. 1

Also, while Chapter 2, Alternatives, includes a matrix, it is not clear whether are differences between certain impacts of Alternative B and those of Alternative C. For instance "potential loss" of species is not explained and the difference between slight and moderate potential for degradation of springs is not clear [p. 2-18]. 2

Printed on Recycled Paper

We appreciate the opportunity to review and provide comments on the DEIS. Please send one copy of the Final Environmental Impact Statement to this office at the same time it is officially filed with our Washington, D.C. office. If you have any questions, please feel free to contact me at (415) 744-1584, or have your staff contact Edward Yates at (415) 744-1571.

Sincerely,

David Farrel, Chief
Environmental Review Section
Office of Federal Activities

MI# 1970

Response to comments of the Environmental Protection Agency

1. Analysis of potential impacts to air quality for the DEIS included telephone interviews with D. Lee, Engineering Supervisor, Clark County Air Pollution Control Division, Las Vegas, Nevada; and C. Owens, Division of Air and Toxics, U.S. Environmental Protection Agency, San Francisco, California. It was the opinion of these experts on air quality that the increases in particulate matter that would result from the proposed mineral entry activities in either alternatives B or C would not be measurable because of the high particulate content that occurs naturally in the area. Based on these opinions, and consultation with the Department of the Interior's Office of Environmental Affairs, a narrative discussion of impacts on air quality was deleted from the DEIS because the impacts were judged to be insignificant in all alternatives.

2. The comparison of alternatives matrix is necessarily a summary of impacts. The impacts in question are explained in more detail in Chapter 4 - Environmental Consequences.

BOB MILLER
Governor

STATE OF NEVADA

JUDY MATTEUCCI
Director

DEPARTMENT OF ADMINISTRATION
Capitol Complex
Carson City, Nevada 89710
Fax (702) 687-3983
(702) 687-4065

3

September 29, 1993

Mark Strong
US Fish and Wildlife Service
911 NE 11th Ave.
Portland, OR 97332-4181

Re: SAI NV # 94300010 Project: EIS, Mineral Withdrawal Desert National Wildlife Range, Clark Lincoln

Dear Mr. Strong:

Attached are the comments from the **Nevada Division of State Lands and the Division of Environmental Protection** concerning the above referenced project. These comments constitute the State Clearinghouse review of this proposal as per Executive Order 12372. Please address these comments or concerns in your final decision.

Sincerely,

Ron Sparks II
State Clearinghouse Coordinator

Enclosures

OCT 3

RECEIVED

93 AUG -5 PM 2:15

Nevada State Clearinghouse

Department of Administration
Budget Division
Blasdel Bldg, Rm. 204
Carson City, Nv. 89710
687-4065

DATE: August 5, 1993

TO:

_____Governor's Office
_____Agriculture
_____Colorado River Cmsn.
_____Communications Bd.
_____Community Services
_____Economic Development
_____Fire Marshal
_____Human Resources
_____Aging Services
_____Health Division
_____Health Protection

_____Legislative Counsel Bureau
XXX _____Minerals
_____Nuclear Projects Ofc.
_____PSC
_____Tourism
_____Transportation
_____UNR Mines Bureau
_____UNR Library
_____Wild Horse Commission
XXX _____Wildlife
_____Natural Heritage

Conservation-Natural Resources:
xxx Director's Office
xxx State Lands
→ xxx Environmental Protection
xxx Forestry
xxx Historic Preservation
_____Conservation Districts
xxx State Parks
xxx Water Resources
_____Water Planning

Nevada SAI #94300010

Project: EIS, Mineral Withdrawal Desert National Wildlife Range, Clark Lincoln

CLEARINGHOUSE NOTES:

The above listed agencies should have received a copy of this EIS directly, if not please contact the Clearinghouse for a copy.

Attached, for your review and comment, is a copy of the above mentioned project. Please evaluate it with respect to its effect on your plans and programs; the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than September 7, 1993. Use the box below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference.

THIS SECTION TO BE COMPLETED BY REVIEWING AGENCY:

_____ No comment on this project
_____ Proposal supported as written
XXX Additional information below

_____ Conference desired (See below)
_____ Conditional support (See below)
_____ Disapproval (Explain below)

AGENCY COMMENTS:

The withdrawal sites must be evaluated for contamination which may be present above federal or state standards. If such contamination of hazardous waste is present, then it must be reported to the Nevada Division of Environmental Protection and the Division of Emergency Management. Remediation of these sites may be required. 1

RECEIVED

SEP 07 1993

Signature David R. Cowperthwaite Date 9/3/93

Response to comments of the Nevada Division of Environmental Protection

1. One of the objectives of the proposed mineral withdrawal is to prevent mining and any environmental contamination that could result. It should not be necessary to evaluate areas that are protected from mining for contamination that would result from mining.

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	OTHER

DIVISION OF
STATE LANDS
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3

Nevada State Clearinghouse

Department of Administration
Budget Division
Blasdel Bldg, Rm. 204
Carson City, Nv. 89710
687-4065

DATE: August 5, 1993

TO:

_____Governor's Office
_____Agriculture
_____Colorado River Cmsn.
_____Communications Bd.
_____Community Services
_____Economic Development
_____Fire Marshal
_____Human Resources
_____Aging Services
_____Health Division
_____Health Protection

_____Legislative Counsel Bureau
xxx _____Minerals
_____Nuclear Projects Ofc.
_____PSC
_____Tourism
_____Transportation
_____UNR Mines Bureau
_____UNR Library
_____Wild Horse Commission
xxx _____Wildlife
_____ Natural Heritage

Conservation-Natural Resources:
_xxx_Director's Office
_xxx_State Lands
_xxx_Environmental Protection
_xxx_Forestry
_xxx_Historic Preservation
_____Conservation Districts
_xxx_State Parks
_xxx_Water Resources
_____Water Planning

Nevada SAI #94300010

Project: EIS, Mineral Withdrawal Desert National Wildlife Range, Clark Lincoln

CLEARINGHOUSE NOTES:

The above listed agencies should have received a copy of this EIS directly, if not please contact the Clearinghouse for a copy.

Attached, for your review and comment, is a copy of the above mentioned project. Please evaluate it with respect to its effect on your plans and programs; the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than September 7, 1993. Use the box below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference.

THIS SECTION TO BE COMPLETED BY REVIEWING AGENCY:

_____ No comment on this project
_____ Proposal supported as written
_____ Additional information below

_____ Conference desired (See below)
_____ Conditional support (See below)
_____ Disapproval (Explain below)

AGENCY COMMENTS:

SINCE THE WITHDRAWAL IS FOR ONLY TWENTY YEARS AND THE MAJORITY OF THE AREA IS MANAGED AS WILDERNESS, AND WILL CONTINUE AS SUCH, WE CAN SUPPORT THE PROPOSED ACTION. THE SITUATION MAY BE DIFFERENT IN TWENTY YEARS AND THE APPROPRIATENESS OF CONTINUING A FULL WITHDRAWAL CAN BE EVALUATED THEN

SEP 0 9 1993

Signature_______________ Date 9-7-93

Response to comments of the Nevada Division of State Lands

Review by the Nevada Division of State Lands is noted and appreciated.

-RE 7/2

BOB MILLER
Governor

STATE OF NEVADA

PETER G. MORROS
Director

RONALD M. JAMES
State Historic Preservation Officer

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF HISTORIC PRESERVATION AND ARCHEOLOGY
123 W. Nye Lane, Room 208
Capitol Complex
Carson City, Nevada 89710
(702) 687-5138

JUL 21

July 19, 1993

Mr. Marvin L. Plenert
U.S. Fish and Wildlife Service
911 N.E. 11th Ave.
Portland, OR 97232-4181

SUBJECT: Draft Environmental Impact Statement (DEIS) for Mineral Withdrawal on the Desert Wildlife Range, Lincoln and Clark Cos.

Dear Mr. Plenert:

The Nevada Division of Historic Preservation and Archeology reviewed the DEIS for the subject undertaking. The Division supports the document as written. We appreciate the opportunity to comment on this undertaking.

Sincerely,

Eugene M. Hattori

Eugene M. Hattori
Archaeologist

Response to comments of the Nevada Division of Historic Preservation and Archeology.

Review by the Nevada Division of Historic Preservation and Archeology is noted and appreciated.

PETER G. MORROS
Director
Department of Conservation and Natural Resources

JOHN RICHARDSON
Administrator

BOB MILLER
Governor

Address Reply to:
123 W. Nye Lane
Carson City, Nevada 89710

Phone: (702) 687-4370

STATE OF NEVADA

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF STATE PARKS

July 26, 1993

RECEIVE
1993
USF&WS REALTY
PORTLAND, OR

Mark Strong
Desert Mineral Withdrawal EIS
US Fish and Wildlife Service
911 NE 11th Ave.
Portland, OR 97332-4181

Dear Mr. Strong:

Thank your for the opportunity to review the Draft EIS for the proposed mineral withdrawal on Desert National Wildlife Range.

On behalf of the Nevada Division of State Parks, I would like to express our support of the withdrawal, as described in the preferred action, Alternative A. The Division shares in the concern and desire to preserve and protect the wildlife, wildlife habitat, desert ecosystem and cultural resources of the Range. Specifically, the Desert National Wildlife Range is the largest of Nevada's Natural Heritage Sites. These sites have been identified by the State of Nevada as areas that are the best examples of Nevada's natural heritage, and areas that are in need of preservation.

Thank you again for the opportunity to review and provide comment on this important proposal.

Sincerely,

Linda Eissman

Linda Eissmann
Park and Recreation Planning Specialist

801.6D

Response to comments of the Nevada Division of State Parks

Review by the Nevada Division of State Parks is noted and appreciated.

3

STATE OF NEVADA
DEPARTMENT OF WILDLIFE
1100 Valley Road
P.O. Box 10678
Reno, Nevada 89520-0022
(702) 688-1500
Fax (702) 688-1595

BOB MILLER
Governor

WILLIAM A. MOLINI
Director

September 29, 1993

Mr. Mark Strong
Desert Mineral Withdrawal EIS
U.S. Fish & Wildlife Service
911 N.E. 11th Avenue
Portland, OR 97232-4181

Dear Mr. Strong:

Nevada Department of Wildlife personnel in Las Vegas have reviewed the Draft Environmental Impact Statement relative to the proposed mineral withdrawal on the Desert National Wildlife Range in Clark County, Nevada.

Although the deadline for comment on the draft EIS has passed, the Department wishes to advise you that we supported the withdrawal since its inception, and there is nothing in the DEIS which has caused us to change that position of support.

Should you wish further input from our agency prior to the completion of the EIS, please contact Mr. Corneio Padilla in our Region III (Las Vegas) office. His phone number is (702) 486-5127, and the mailing address is Nevada Department of Wildlife, State of Nevada, Mail Room Complex, Las Vegas, NV, 89158.

Sincerely,
WILLIAM A. MOLINI, DIRECTOR

John W King

John W. King,
Habitat Staff Wildlife Biologist

cc: Ken Voget, USFWS
Butch Padilla, R-III

Response to comments of the Nevada Department of Wildlife

Review by the Nevada Department of Wildlife is noted and appreciated.

STATE OF NEVADA
DEPARTMENT OF MINERALS
400 W. King Street, Suite 106
Carson City, Nevada 89710
(702) 687-5050
Fax (702) 687-3957

BOB MILLER
Governor

Las Vegas Branch
4220 S. Maryland Pkwy.
Suite 304
Las Vegas, Nevada 89119
(702) 486-7250
Fax (702) 486-7252

RUSSELL A. FIELDS
Executive Director

September 7, 1993

RECEIVED
SEP [redacted]0
USFWS REALTY
PORTLAND, OR 97232

Mark Strong
U.S. Fish and Wildlife Service
911 N.E. 11th Avenue
Portland, Oregon 97232-4181

SUBJECT: Comments on Draft Environmental Impact Statement - Mineral Withdrawal Desert National Wildlife Range

Dear Mark,

The Nevada Department of Minerals appreciates the opportunity to comment on the Draft Environmental Impact Statement - Mineral Withdrawal Desert National Wildlife Range.

The Department of Minerals is the state agency charged with the responsible development of mineral and energy resources for the benefit of the people of Nevada.

The Department of Minerals supports Alternative B, which allows for limited mineral resource exploration and development, rather than the preferred alternative which calls for a total mineral withdrawal. The Department believes that current laws and regulations are adequate to protect wildlife and cultural resources, while allowing for some mineral development.

The tone of the DEIS is disturbing, as the document suggests that mining and exploration (including casual use) will severely impact other resources. This is typified by a statement in the "Purpose of and Need for Actions:" 1

> "Action (mineral withdrawal) is required because the existing wildlife habitat, biological diversity, and cultural resources of the Range are threatened by exploration and mining under terms prescribed by the Mining Law of 1872, . . ." (p. 1-3)

In Chapter 3, numerous references are made to negative impacts to the Range by mining and exploration. Many of these suggested impacts are speculative because detailed surveys of the biological and cultural resources have not been performed. 2

> "No formal archaeological survey or investigation has been accomplished for the District, although a few sites have been recorded." (p. 3-43) 2
>
> "There are two Category 2 candidate mammal species believed to occur on the Range, the spotted bat (Euderma maculatum) and Hidden Forest chipmunk (Eutamias unbrinus nevadensis)." (p. 3-35)
>
> "The spotted bat's presence on the Range is unconfirmed." (p. 3-37)

The DEIS makes great efforts to portray the impacts of mining as being very detrimental to the Range, yet ignores the disturbance caused by the Nellis Air Force Range as being a primary user of the Desert National Wildlife Range. According to the DEIS, more than half of the 1,588,000 acres (818,000 acres) are occupied by the bombing and artillery range. Of this area, "172,208 acres or 20.5% of the bombing and gunnery range are designated as 'impact zones for air to ground ordnance delivery' where ordnance may actually strike the ground." (p.3-5) 3

This permitted disturbance area of 172,208 acres for the Air Force contrasts with the disturbance by mining in Clark County. According to the Department of Minerals 1992 Mine Registry Database, there are approximately 2,012 acres of current and 3,137 acres of cumulative mining disturbance among active mines in Clark County. This represents less than 2% of approved military disturbance and does not take into account the fact that much of the mining disturbance will be reclaimed. By comparison disturbance due to mining on a scale found in all of Clark County will still be minuscule as opposed to that of the military.

The DEIS is lacking in the timeliness and accuracy of its socioeconomic statistics as found in Chapter 3. Information found in Tables 3-8 and 3-9, as well as elsewhere, is several years out of date. Data for the years 1991 and 1992 exists and should be used. 4

Overall, the "anti-mining" tone of this document seriously impairs it as an objective and impartial NEPA document. Apparently, the decision to withdraw mineral entry was made before the options were considered, so this DEIS does not truly fulfill its NEPA function. Ironically, the possible impacts from mining are negligible when compared to the very large impacts 5 associated with an accepted activity, that of the bombing and artillery range.

The Department of Minerals hopes the U.S. Fish and Wildlife Service will reconsider its preferred alternative in this document. 5

Sincerely,

Walt Lombardo

Walt Lombardo
Chief, Las Vegas Branch

das

* * This hardcopy is a follow-up of the fax sent on September 7, 1993 * *

Response to comments of the Nevada Department of Minerals

1. The potential for mitigation for and/or reclamation of impacts to wildlife and habitat caused by mineral development practices may be valid considerations on public lands administered for multiple uses by the Bureau of Land Management or the Forest Service. However, uses of units of the National Wildlife Refuge System are restricted to activities that are compatible with the purposes for which the refuge unit and the system were established. The concept of compatibility is absolute as defined in the National Wildlife Refuge Administration Act and recent court decrees. As a result, Service policy applies the standard of compatibility to be either yes or no; that is, an activity is either compatible, or it is not. Adverse impacts that occur, even temporarily, are incompatible regardless of mitigation or reclamation that may be possible elsewhere or at another time. Please refer to sections 1.2, 1.3, and 3.2.4 of the EIS for a more complete discussion of refuge objectives and compatibility.

2. In the context of compatibility as explained in response number 1, it was necessary to fully document the details of biological and cultural resources to project impacts that are incompatible with the purposes of the Range. The projections of impacts are based on the judgement of the experienced professional wildlife biologists and archaeologists on the EIS team.

3. By statute and policy, the standard of compatibility may only be applied to activities over which the Service has administrative control. Use of a portion of the Range by the Air Force as a bombing range, while obviously incompatible with the purposes of the Range, was directed by Congress, and is not under the administrative control of the Service.

4. Many of the economic data used for impact analysis were compiled from a U.S. Department of Commerce publication dated April 1991. This was the latest information available at the time the economics section of Chapter 3 (affected environment) was drafted in early 1992. The impact analysis section of the draft EIS was postponed until early 1993 because of delays in completion of the mineral assessment. Economic data were not updated because impacts were so minor relative to the total economy of Clark County (loss of 3/100th of 1 percent) that continuation of trends would not have made them significant.

5. From the perspective of multiple-use, the document may be perceived by some to be anti-mining. From the perspective of the statutes and policies that constrain Service administration of the National Wildlife Refuge System, the document is an objective analysis of a proposed secondary use.

DESERT BIGHORN COUNCIL

Established to promote the advancement of knowledge concerning the Desert Bighorn Sheep and the long-range welfare of these animals.

August 18, 1993

Mr. Mark A. Strong
U.S. Fish and Wildlife Service
911 N.E. 11th Avenue
Portland, OR 97232-4181

RE: Draft Environmental Impact Statement for Mineral Withdrawal of the Desert National Wildlife Range

Dear Mr. Strong:

The Technical Staff of the Desert Bighorn Council has reviewed the draft EIS for mineral withdrawal of the Desert National Wildlife Range and our comment is offered below, following our introduction.

The Desert Bighorn Council (Council) was founded in 1957, and is comprised of wildlife biologists, scientists, administrators, managers and others interested in the welfare of desert bighorn sheep.

The Council has four primary objectives: (1) To provide for the exchange of information on the needs and management of the desert bighorn through meetings and published transactions; (2) to stimulate and coordinate studies in all phases of the life history, ecology, management and protection, recreational and economic values of the desert bighorn; (3) to provide a clearinghouse of information among all agencies, organizations and individuals professionally engaged in work on desert bighorn; and (4) to function in an advisory capacity, where appropriate, on local, national and international questions involving management and protection of the desert bighorn.

Based on the information presented, the Council supports the Proposed Action, Alternative A, since it is in the best interest of desert bighorn populations using the Desert National Wildlife Range.

Sincerely,

William R Brigham

William R. Brigham, Chairman
Technical Staff
Desert Bighorn Council
P. O. Box 71478
Reno, NV 89570

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AUG 23 [redacted]
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PORTLAND, OR 97232

Response to comments of the Desert Bighorn Council

Review by the Desert Bighorn Council is noted and appreciated.

Defenders
OF WILDLIFE

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SEP 7 1993

August 31, 1993

Mark Strong
Desert Mineral Withdrawal EIS
U.S. Fish and Wildlife Service
911 N.E. 11th Avenue
Portland, OR 97232-4181

RE: Support for the proposed mineral withdrawal on Desert National Wildlife Range.

Dear Mr. Strong:

Defenders of Wildlife submits this letter as our comments and recommendations in response to your July 9 correspondence and the Draft Environmental Impact Statement (DEIS) with respect to the proposed mineral withdrawal on Desert National Wildlife Range (Range). Please consider our input, and include this letter in the appropriate administrative record.

We strongly support and urge the Fish and Wildlife Service to withdraw approximately 770,000 acres of the Range from entry for locatable minerals for a period of at least 20 years. This withdrawal would protect the important biological and cultural resources of the Range and prevent incompatible uses.

We concur with the information provided in the above-mentioned DEIS, and we commend the Fish and Wildlife Service for taking steps to protect biodiversity by integrating landscape ecology and conservation biology principles into Range management.

Thank you very much for your consideration.

Sincerely,

SLCovello

Suzanne L. Covello
California/Nevada Program Assistant
Defenders of Wildlife

CALIFORNIA OFFICE: 1228 N ST., SUITE #6, SACRAMENTO, CA 95814 • (916) 442-6386 • FAX: (916) 442-6389
NATIONAL OFFICE: 1244 NINETEENTH ST., NW • WASHINGTON, DC 20036 • (202) 659-9510 • FAX: (202) 833-3349

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Response to comments of the Defenders of Wildlife

Review by the Defenders of Wildlife is noted and appreciated.

SEP 13

THE WILDERNESS SOCIETY

September 13, 1993

Mr. Mark A. Strong
EIS Team Leader
Desert Mineral Withdrawal EIS
U.S. Fish and Wildlife Service
911 N.E. 11th Avenue
Portland, OR 97232-4181

RE: Draft Environmental Impact Statement: Mineral Withdrawal Desert National Wildlife Range (July 1993)

Dear Mr. Strong:

On behalf of The Wilderness Society and National Audubon Society, I thank you for the opportunity to comment on the U.S. Fish and Wildlife Service's proposal to withdraw a portion of the Desert National Wildlife Range (NWR) from operation of the 1872 Mining Act (Mining Act). We strongly support the Service's proposal to withdraw approximately 770,000 acres from entry for locatable minerals. In order to protect the significant natural resources of the Desert NWR and to prevent future problems with incompatible mining activities, however, the Service should modify the proposed action to include a withdrawal from the operation of laws governing leasable and salable minerals. 1

The incompatibility of mining with the purposes of Desert NWR and need to protect the outstanding wilderness character of the Desert NWR make a mineral withdrawal essential. For these same reasons, we are disappointed that the Service did not include a recommendation for a withdrawal of the portion of the range overlain by the military's secondary withdrawal, nor did the Service propose withdrawal of the refuge from the operation of other mineral laws, namely the laws governing leasable and saleable minerals. 2

Compatibility

We concur with the Service that implementation of either of the alternatives that permit mining would be incompatible with the purposes of the Desert NWR (see pages 4-8 and 4-15). Over the past quarter century, the Fish and Wildlife Service and others have

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(202) 833-2300

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repeatedly documented problems with inappropriate and harmful economic, recreational and other uses of refuge lands. The Leopold Report of 1969, the Special Refuge Task Force Report of 1978, the General Accounting Office Reports in 1981, 1984, and 1989, and the U.S. Fish and Wildlife Service reports in 1982, 1983, and 1987 all raised serious questions about the Service's administration of the National Wildlife Refuge System. Most recently, in its 1990 report entitled "Secondary Uses Occurring on National Wildlife Refuges" the Service reported that harmful activities occurred on roughly 63 percent of all units in the Refuge System.

In the 1989 General Accounting Office report, mining was reported by refuge managers to be "harmful" on 22 of the 26 refuges on which it occurred (85%). This use was considered harmful on a higher percentage of the refuges where it occurred than any other use in the Refuge System.

The lands covered by the Service's proposed action have been segregated from operation of the Mining Law since 1973 to protect the wildlife and desert ecosystem on the Range (p. 1-3) preventing mining activity that is incompatible with the purposes of the Range. This remains ample justification for the proposed withdrawal of the Range from operation of the Mining Act.

Wilderness

The outstanding wilderness character of the Desert NWR provides another compelling reason to withdraw the range from operation of the Mining Act. Desert NWR consists of 1,588,819 acres of which, according to the DEIS, 1,332,900 acres qualify as wilderness. These were recommended by the U.S. Fish and Wildlife Service for designation as wilderness in 1975. Approximately 759,000 acres of that Wilderness proposal occur in the area covered by the DEIS.

Failure to continue protection of these lands from mineral entry would be a violation of ". . . the clear intent of Congress . . . that both the President and the Congress shall have a meaningful opportunity to add . . . areas predominantly of wilderness value" to the Wilderness Preservation System (Parker v. United States, 405 U.S. 989 (1972)). The so-called "Parker Doctrine" requires that agencies preserve a "meaningful opportunity" for Congress to add areas to the Wilderness Preservation System.

The Federal Land Policy and Management Act required BLM to manage its roadless areas studied for inclusion in the Wilderness Preservation System in a manner so as not to impair the suitability of such areas for preservation as wilderness (43 U.S.C. § 1782(c). Similar intent was implied in the Wilderness Act of 1964 for National Wildlife Refuge System lands. The 770,000 acres and 67,000 acres that would be made vulnerable to mining activity by alternatives B and C respectively contain important roadless areas suitable for wilderness designation. Maintaining the mineral withdrawal for the entire refuge is critical to preserving Congress's option for adding such areas to the Wilderness System.

We do not share the Service's apparent pessimism that Congress will not designate any of the proposed wilderness in Desert NWR as Wilderness. (Alternatives B and C contemplate the release of significant areas deemed suitable for wilderness designation after Congress acts on the Desert NWR wilderness proposal.) As recognized in the DEIS, these lands should continue to be managed in a manner that preserves their wilderness qualities (p. 3-6). 3

Lands Overlain by Military Withdrawal

Desert NWR contains approximately 839,880 acres that are secondarily withdrawn for military use and are not covered by the mineral withdrawal proposed by the Service. The Service's original proposal for a mineral withdrawal for Desert NWR did include these lands. The DEIS concludes that these lands are already withdrawn until 2001 by P.L. 99-606 and because it was not feasible to complete a mineral assessment of that portion of the refuge in the time available because of restrictions on access (p. 2-2). The lands covered by the military overlay contain important wildlife and wilderness values that must be protected from incompatible secondary uses like mining. While we believe these important lands should have been included in the proposed mineral withdrawal for the Desert NWR, we now urge the Service and the military to complete the necessary mineral studies so Congress may act on the pending wilderness proposal for the range. 4

Leasable and Saleable Minerals

The Service dismissed from further consideration an alternative that would have withdrawn the refuge not just from operation of the Mining Act (for locatable minerals), but also from the laws governing leasable and saleable minerals (see DEIS page 2-1). This despite the admission that the DEIS team considered this the alternative "to best protect the wildlife and wilderness values of the Range" (p. 2-1). The DEIS asserts that regulations governing administration of leasable and saleable minerals "are adequate to provide the desired protection for wildlife and wilderness values without a withdrawal." We disagree. As stated in the DEIS, mining activity is incompatible with the purposes of the Desert NWR to protect wildlife, including Nelson's desert bighorn sheep, and to protect and maintain the integrity of recommended wilderness areas. 5

In short, while we strongly support the Service's proposal to withdraw much of Desert NWR from operation of the Mining Law, the Service's purpose for seeking the withdrawal--"to protect the biological resources of the Range and prevent uses that would be incompatible with the purposes and objectives of the Range" (p. 1-3)--would be better served by a more comprehensive withdrawal proposal. We recommend the Service modify the proposed alternative to cover leasable and saleable minerals.

Thank you again for the opportunity to comment on the proposed Desert NWR mineral withdrawal. We commend the Service for acting to prevent future problems with incompatible mining activity at the Desert NWR.

Sincerely,

Pamela Pride Eaton
Director
Refuges and Wildlife Program

also for

James R. Waltman
Wildlife Specialist
National Audubon Society

cc: The Honorable George T. Frampton, Jr.
The Honorable Gerry Studds
The Honorable George Miller
The Honorable Max Baucus
The Honorable Bennett Johnston
Richard Smith, Acting Director, U.S. Fish and Wildlife Service
Mollie Beattie, Director Designate, U.S. Fish and Wildlife Service

Response to comments of The Wilderness Society, National Headquarters and the National Audubon Society

1. The proposed action of the DEIS does not include withdrawal from the laws governing leasable and salable minerals because those laws allow the Service to prohibit all entry activities for those classes of minerals if that is appropriate. The proposed withdrawal of locatable minerals would effectively bring the Range into the same status as most other units of the refuge system.

2. Because of access problems it was not possible to complete a mineral assessment on the portion of the Range overlain by the Nellis Air Force Range in the time that remained before the segregation expired. Also, the area is currently withdrawn until 2001 by Public Law 99-606. The Air Force is planning to complete a mineral assessment by 1998, and the area will be considered for withdrawal before the existing withdrawal expires.

3. Alternatives B and C are not based on pessimism that Congress will not declare the Range suitable for wilderness. The National Environmental Policy Act requires analysis of a full range of feasible alternatives. Alternatives B and C, while not probable, are certainly possible and feasible.

4. Refer to response number 2 above. Once the mineral assessment is complete, all the necessary information will be available for Congress to complete consideration of the recommended wilderness areas on the Range.

5. Refer to response number 1 above.

[illegible]
REGION 1 PORTLAND

THE WILDERNESS SOCIETY

CALIFORNIA/NEVADA REGIONAL OFFICE

September 28, 1993

Mark Strong
Desert Mineral Withdrawal EIS
U.S. Fish and Wildlife Service
911 NE 11th Avenue
Portland OR 97232

re: Mineral Withdrawal Desert National Wildlife Range, Draft Environmental Impact Statement

Dear Mr. Strong:

The Wilderness Society strongly supports Alternative A, Wildlife Range Withdrawal, of the Mineral Withdrawal, Desert National Wildlife Range Draft Environmental Impact Statement. The withdrawal from entry of 770,000 acres of desert for wildlife habitat improvement is a firm step forward in the crucial effort to preserve this nation's unique desert wildland heritage. The protection of habitat for bighorn sheep, desert tortoises, and irreplaceable cultural resources is a goal of which all Americans can endorse and be proud.

Thank you for the opportunity to comment on this important facet of the ongoing process of America's land stewardship.

Sincerely,

Barbara Spolter

Barbara Spolter
Regional Associate

116 NEW MONTGOMERY, SUITE 526, SAN FRANCISCO, CA 94105
(415) 541-9144

Response to comments of the Wilderness Society, California/Nevada Regional Office

Review by the Wilderness Society, California/Nevada Regional Office is noted and appreciated.

THE DESERT PROTECTIVE COUNCIL, INC.
A NON-PROFIT ORGANIZATION

To safeguard for wise and reverent use by this and succeeding generations those desert areas of unique scenic, scientific, historical, spiritual and recreational value and to educate by all appropriate means children and adults to a better understanding of the desert.

P.O. BOX 2312 • VALLEY CENTER • CALIFORNIA 92082

DESERT PROTECTIVE COUNCIL
ADVISORY PANEL

SYLVIA BROADBENT
Professor of Archaeology
DOROTHY COWPER
Archaeologist
PETE DANGERMOND
Park Consultant
MARY DEDECKER
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BETTY FORGEY
Desert Tortoise Activist
MICHAEL FROME
Author
AUGUST FRUGE
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ROBERT STEBBINS
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FRANK VASEK
Professor of Botany
LEONARD VINCENT
Professor of Biology
STANLEY WELSH
Museum Curator
FRANK WHEAT
Attorney
HOWARD WILSHIRE
Geologist

DATE: September 9, 1993

SEP 1 1

Mark Strong Desert Mineral Withdrawal EIS
Fish and Wildlife Service
911 N.E. 11th avenue
Portland, OR 97232-4181

Dear Mr. Strong:

This letter will confirm our phone message of 9-9-93 stating that this organization supports Alternative A. This statement is based upon the Summary document as mailed July 9, 1993.

Please keep this organization on the mailing list for the Final EIS.

Respectfully submitted,

Douglas W. All

Douglas W. Allen, President

Response to comments of the Desert Protective Council, Inc.

Review by the Desert Protective Council, Inc. is noted and appreciated.

KENNETH M. REIM
MINING ENGINEER
2733 Billy Casper Drive
Las Vegas, NV 89134-7814

(702) 254-2764

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PORTLAND, OR 97232

September 4, 1993

United States Department of Interior
Fish and Wildlife Service
911 N.E. 11th Avenue
Portland, Oregon 97232-4181

Attn: Mr. Mark A. Strong

Re: Draft Environmental Impact Statement (DEIS), Mineral Withdrawal, Desert National Wildlife Range, Clark and Lincoln Counties, Nevada

Gentlemen:

A limited review has been made of the above referenced DEIS, and the supporting report prepared under contract by the USF&WS with the Nevada Bureau of Mines and Geology (NBM&G), University of Nevada Reno entitled "Energy and Mineral Resource Assessment of the Desert National Wildlife Range, Eastern Section, Clark and Lincoln Counties, Nevada", dated January 12, 1993. The DEIS is on continuing the mineral withdrawal for another 20 years.

The NBM&G report is the technical basis for the preparation of this DEIS. Thus, my first comments are on the NBM&G report as follows:

- The third paragraph of the Summary on page 1 provides the summary/conclusions, which does not reflect clearly the data presented in Tables 1-1, 1-2 and 1-3, and the following text and appendices. This third paragraph states "... define areas with potential for the discovery of mineral resources." These tables state there is a "High Resource Potential" in certain areas for (1) base metals, (2) high-calcium limestone, (3) cement limestone, (4) dolomite and (5) sand and gravel, instead of just the phrase "potential". If these lands were open to mineral entry, there is a high probability that an exploration program would define mineral resources that could be commercially exploitable. 1

- The Summary text appears to minimize the mineral resource potential of the area, whereas the tables, text and appendices states there is a High Resource Potential for certain minerals in various areas. Thus, the DEIS takes the words in the Summary text of the NBM&G report and misleads the USF&WS, USBLM, U.S. Dpepartment of Defense and public reading the DEIS on the mineral resource potential of the area.

USF&WS DNWR DEIS

- On page 6 and in the list of references, there is no reference that the Minerals Classification Branch, BLM's maps (formerly prepared by the U.S. Geological Survey) showing the classification of leasable minerals in the State of Nevada have been reviewed. Also, there is no indication that the Bureau of Mines, USDI data on areas favorable for locatable minerals have been reviewed. This information should have been incorporated into this report. 1

- On page 34 are two brief sections of the report entitled "C. Reserves and Identified Resources" and "D. Recommendations for Further Work"; part of the overall section "7. Description of Energy and Mineral Resources". Section C states "No mineral resources were identified...". This statement is directed at zinc-lead occurrences, and makes no reference to those mineral resources which are stated to have High Resource Potential. Base on the United States Geological Survey Circular 831, A Resource/Reserve Classification for Minerals, and analyses of samples stated in the appendices, I am of the opinion there are "identified mineral resources in the area". Again the wording in these sections of the report are misleading. 1

- The copy of the report I had available from the University of Nevada-Las Vegas Library for review had no color plates of the remote sensing studies, pages 35-46, thus, I am unable to comment on that section.

- On page 81, the last sentence states "...the Desert National Wildlife Range is favorable for industrial mineral development"; this is not stated in the Summary. 1

- On page 91 it is stated the borate potential is considered low with a certainty level of D. Tables 8-1, page 54 and Table 8-3, page 58 show that boron (B) was not part of the geochemical analyses. This report states that the Horse Springs Formation occurs in this area, and in the Muddy Mountains, borates have been mine from this formation. Geochemical sampling of the Horse Springs Formation for boron would have been a better basis for making a statement on the borate potential for the area. 1

Comments on the DEIS, Mineral Withdrawal, Desert National Wildlife Range, July 1993, are as follows:

- In reference to Tables S-1 and 2-1, the descriptive adjectives appear to be slanted toward placing mineral resource development and its associated human factors (jobs for people) in a negative position, versus physical and biological factors in a positive position. Some examples are as follows: 2

- Under Alternative B, the impacts to groundwater and springs is considered to be low instead of moderate.
- The impact to desert big horn sheep and the desert tortoise for Alternatives B and C is stated to displace 50 sheep and loss of potential habitat for 11 to 14 desert tortoises. Those numbers are stated as if they are factual, whereas they are only a estimate of what may happen - does the reader understand that?
- Under Alternatives B and C there are statements that habitat will be destroyed. During a mining operation and when it ceases, reclamation takes place. Thus, any destruction of habitat is temporary and should be so stated. The reclaimed areas of habitat maybe of lower, equal or higher quality than the original habitat. 2
- It states that there will be only minor benefit to the local economy under Alternatives A and B. A number of minor benefits can add up to a large positive benefit, or to a large negative benefit to the local economy, the state and nation.
- This table states there will be "significant" loss of solitude and wildlife observation and degradation of visual resources under Alternatives B and C. The use of the adjective significant is ill defined, and is speculative as used herein.

- The premise is that leasable and salable mineral leases can continue to be granted in that regulations permit adequate control, however, do not for locatable minerals. Today, with exiting federal and state environmental permitting and bonding requirements, this premise is no longer valid. Have any mineral leases been granted in the last 10 years, or are the lease restrictions such that no prudent person would enter into a mineral lease? 3

- If the 1872 mining law is changed to be similar to leasing, how will this proposed mineral withdrawal affect that?

- Income from a small potential mining operation was dismissed as "... would not be considered significant". To strengthen our local and national economy, we need to increase the number of small businesses. The negative consideration given in the DEIS fro the developing of a small mine is part of the reason for our slow economy, and is in direct opposition to our President Clinton's stated objective to encourage small business. 4

There is significant potential for future nonmetallic mineral development in this area. I have seen the Las Vegas area grow from about 50,000 population in the early 1950s to now about 1,000,000 people. There have been significant increases of population in the 5 southwestern United States, and this will continue. The increasing availability of nonmetallic mineral resources in southern Nevada is most important for the future well being of our nation. Multiple use of these lands should be maximized, rather than limited single uses. 5

An exhaustive review of these two reports have not been made. However, it is clear the Nevada Bureau of Mines and Geology report and DEIS were written with a bias toward continuing the withdrawal of minerals in the Desert National Wildlife Range. This is a disservice to the American people. 6

These comments are base on over 40 years of experience in the mineral resource industry, and being a Registered Professional Geologist and Mining Engineer.

Respectively submitted,

Kenneth M. Reim

Kenneth M. Reim

cc: Mr. Billy R. Templeton
Director, Nevada State Office
USDI, Bureau of Land Management
850 Harvard Way
P.O. Box 12000
Reno, NV 89520-0006

Ms. Eloise V. Hopper
Director, Environmental Management
USAF, WTC/EV
4551 Devlin Drive
Nellis Air Base, Nevada 89191-6546

Dr. James L. Hendrix, Dean
Mackay School of Mines
University of Nevada-Reno
Reno, Nevada 89557-0047

Senator Harry Reid
United States Senate
500 South Rancho Drive
Las Vegas, NV 89101

Representative Barbara Vucanovich
U.S. House of Representatives
6900 Westcliff Drive
Las Vegas, NV 89128

Response to comments of Kenneth M. Reim

1. The mineral assessment provided by the Nevada Bureau of Mines and Geology was approved by the District Geologist and District Manager of the Las Vegas District of the Bureau of Management as meeting standards required for mineral withdrawals. The summary conclusions stated in the DEIS are excerpted from the assessment, and were not made by the Service. The Summary states on page S-2 that "examination of data collected during the assessment program defined areas with potential for the discovery of mineral resources. Industrial minerals such as high calcium limestone and cement limestone are considered the most likely to have economic development potential."

2. The comparison of alternatives matrix is necessarily a summary of impacts. The impacts in question are explained in more detail in Chapter 4 - Environmental Consequences. From the perspective of multiple-use, the document may be perceived by some to be anti-mining. From the perspective of the statutes and policies that constrain Service administration of the National Wildlife Refuge System, the document is an objective analysis of a proposed secondary use.

3. The premise for not withdrawing the Range from the laws and regulations governing leasable and salable minerals is that those laws allow the Service to prohibit all entry activities for those classes of minerals if that is appropriate. The proposed withdrawal of locatable minerals would effectively bring the Range into the same status as most other units of the refuge system. If the 1872 mining law was changed to be similar to leasing, the withdrawal would no longer be necessary.

4. Providing natural resources for the express purpose of strengthening the local and national economy is not a purpose of the National Wildlife Refuge System. Please refer to Sections 1.2, 1.3, and 3.2.4 of the EIS for a more complete discussion of refuge purposes and compatibility.

5. Secondary (non-wildlife oriented) uses of units of the National Wildlife Refuge System are restricted by statute and court decree to activities that are compatible with the purposes for which the refuge unit and the system were established. Refer to response number 4 above.

6. Refer to response number 2 above.

5.4 LIST OF AGENCIES, GROUPS, AND INDIVIDUALS RECEIVING A COPY OF THIS EIS

The following is the most current list of recipients that will receive the EIS. Recipients are added or deleted as requests are received. A master list is kept by the Service's Division of Realty in Portland, Oregon.

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GOVERNOR OF NEVADA

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Honorable Mike McGinness
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Honorable Stephanie Smith

U.S. DEPARTMENT OF THE INTERIOR

Assistant Secretary, Energy and Minerals, Washington, D.C
Assistant Secretary, Fish, Wildlife, and Parks, Washington, D.C.
Assistant Secretary, International Affairs, Washington, D.C.
Assistant Secretary, Land and Water Resources, Washington, D.C.
Environmental Affairs Office, Washington, D.C.
Office of the Solicitor, Sacramento, CA
Regional Environmental Officer, San Francisco, CA
U.S. Fish and Wildlife Service: Las Vegas, NV; Reno, NV, Portland, OR, Washington, D.C.; Fort Collins, CO
U.S. Bureau of Land Management: Reno, NV; Las Vegas, NV; Washington, D.C.; Caliente, NV
U.S. National Park Service, Washington, D.C.
U.S. Geological Survey: Carson City, NV & Las Vegas, NV
U.S. Bureau of Mines, Spokane, WA
U.S. Bureau of Reclamation, Boulder City, NV

OTHER FEDERAL AGENCIES

U.S. Soil Conservation Service, Reno, NV

U.S. Forest Service, Sparks, NV
U.S. Air Force, Nellis Air Force Base, Las Vegas, NV
U.S. Environmental Protection Agency, San Francisco, CA

STATE AGENCIES

Nevada Department of Wildlife: Director; Regional Supervisor, Region 3
Nevada Board of Wildlife Commissioners
Nevada Department of Minerals
Nevada Department of Administration, State Clearinghouse (OCS/SPOC)
Nevada Department of Conservation & Natural Resources
Nevada Division of Water Resources
Nevada Division of State Parks
Nevada Division of State Lands
Nevada Division of Forestry
Nevada Division of Conservation Districts
Nevada State Environmental Commission
Nevada State Park Advisory Commission
Nevada Division of Historic Preservation & Archaeology
Nevada Division of Environmental Protection
Nevada Bureau of Mines & Geology
University of Nevada, Reno, Dept. of Range, Wildlife & Forestry

LOCAL GOVERNMENT

Alamo Town Board
Clark County Manager
Las Vegas City Manager
Lincoln County Commissioners

ORGANIZATIONS

American Federation of Mineralogical Societies, Inc.
American Lands Access Association, Inc.
Beatty Chamber of Commerce
Beatty Information Center
Beatty Town Advisory Board
Defenders of Wildlife
Desert Bighorn Council
Desert Fishes Council
Desert Research Institute
Desert Tortoise Council
Desert Tortoise Preserve Committee, Inc.
Environmental Defense Fund
Foundation for North American Wild Sheep
Fraternity of the Desert Bighorn
Gold Searchers Association
Mineral Policy Center
National Audubon Society
National Wildlife Federation
National Wildlife Refuge Association
Natural Resources Defense Council, Inc.
Nevada Bighorns Unlimited
Nevada Mining Association
Nevada National Heritage

Nevada Wildlife Federation
Northeast Nevada Mule Deer Chapter
Pioche Chamber of Commerce
Public Resource Associates
Sierra Club
South Nevada Homebuilders Assoc.
The Desert Protective Council, Inc.
The Izaak Walton League of America, Inc.
The Nature Conservancy
The Wilderness Society
The Wildlife Society, Nevada Chapter and Western Section

INDIVIDUALS AND COMPANIES

Action Mining
Ades, Ely
Airway Rock Products
Amax Resources
American Sand and Gravel
Anderson, D. N.
Angst, Incorporated
Austin, Gregory G.
Badillo, Lucinda
Bartlett, Lue
Basic Ready Mix, Inc.
Basic, Incorporated
Benedict Contractors
Bonanza Ready Mix
Boulder Sand and Gravel
Brown, Charlie Construction
Burr, Lynn
Cashman Equipment Company
Causey, Ron
Chemstar, Inc.
Cind-R-Lite Block Company
Condor Mining
Cripps, Cleo
Crooks, Helen
Crowell, J. Irving, and Son
Cyprus Tonopah Mining Corporation
Degerstrom, N.A., Inc.
Delorda Mining
Dynamac Corporation
Fat Chance Enterprises
FMC Gold Company
Frehner Construction Company, Inc.
Friesena, H. Paul
Geddie, John
Georgia Pacific Corporation Quarry
Geotemps
Gibson, M. J., Inc.
Gornowich Sand and Gravel
H and S Contracting

Hardie, James Gypsum Mining
Harlan, Shirley
Homestake Mining Company
IMV Division of Floridin Company
Independence Mining Company
Jakes Crane and Rigging Inc.
Kenny's Construction
Kerry Cutting
LAC Minerals Corporation
LAC Gold Colosseum Inc.
Landau Associates, Inc.
Las Vegas Paving Corporation
Las Vegas Building Materials
Lescenski, William
Lewis, Ron Construction
Linn, Lynn
Long, Richard (EMA)
Luzier Insurance
MAACO Engineering
Marble Falls Mine
Markoff and York
Marnell Corrao
Martin-Harris Construction
Max, Bill
McCarthy Construction/Mark Diversified
Mercury Blue Print
Merritt, Alberta
Mosley, Donald M.
Mull, Ted C. Construction Company
Naridon Corporation
Nevada Ready Mix
Nevada Gypsum Mining
Newsome Construction
Northwestern Data Network
NOSA
Offimex Group, Limited
Pabsco Gypsum Apex
Pace Construction
Pearson, Wayne
Pearson, Bart
Pearson, Lu A.
Pearson, Keith A.
Pearson, Roger
Prince Mine
PSMI
Rare Metals Corporation
Reim, Kenneth M.
Richard, Merl
Richardson Construction
Riggs, Max
Roche Constructors
Rogers, Keith

Rose, David
Round Mountain Gold Corporation
Sadtler, Edward (STRA)
Saga Exploration Company
Santa Fe Pacific Gold Corporation
Sierra Construction Corporation
Silver State Equip. Company, Inc.
Simplot Silica Products
Sletten Construction
Southern Nevada Paving
St. Joe Gold/Dallhold
Stacy Enterprises
Steed Brothers Construction
Sunrise Ready Mix
Sunshine Mining Company
Swanson Construction
Tibesar Construction
Ungaro Construction
Vanderbilt Minerals Corporation
Vanderbilt Gold Corporation
Viceroy Gold Corporation
W. M. K. Transmit Mix
Wells Cargo, Inc.
Wilkinson, Alma J.

LIBRARIES

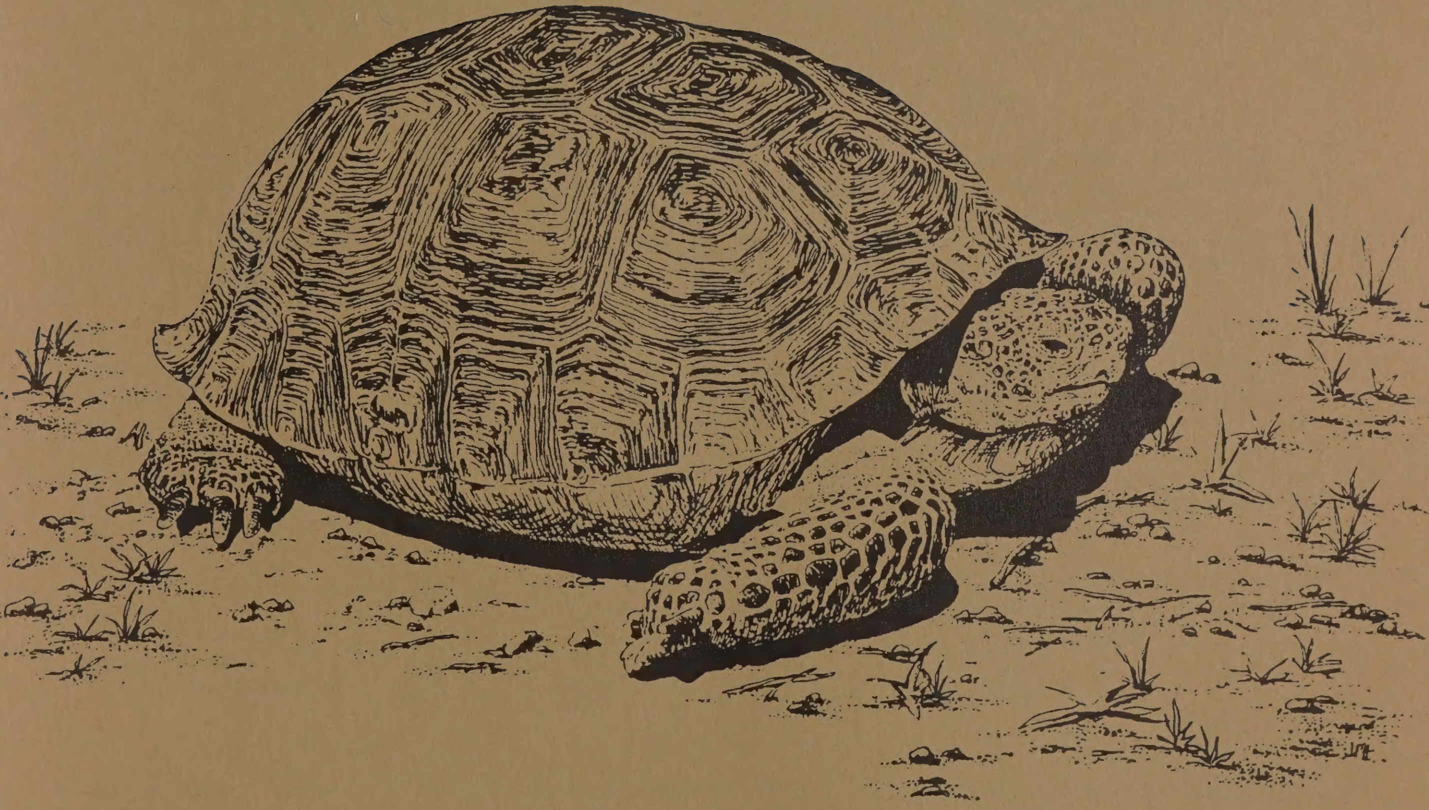
Alamo Branch-Lincoln County Library
Beatty Public Library
Caliente Branch--Lincoln County Library
Las Vegas City Library
Pioche Branch--Lincoln County Library
Colorado State University Library

NEWS MEDIA

Carson City Nevada Appeal
Dorothy Kosich/Mining News
Henderson Home News
KNUU Las Vegas
KLAS Las Vegas
KLVX Las Vegas
KTVN Las Vegas
KVBC Las Vegas
KRLR Las Vegas
Las Vegas Review Journal
Las Vegas Sun
Reno Gazette-Journal
Lincoln County Record

CHAPTER 6

LIST OF PREPARERS



CHAPTER SIX
6.0 LIST OF PREPARERS

PREPARER	ROLE IN EIS	QUALIFICATIONS
Mark A. Strong Wildlife Biologist Division of Realty Refuges and Wildlife Program Pacific Region U.S. Fish and Wildlife Service	EIS Team Leader, Editor, Author: Desert Ecosystem description and consequences	M.S., Wildlife Biology; 24 years experience as a wildlife biologist including 8 years with the Bureau of Land Management and 14 with the Fish and Wildlife Service
Bruce Zeller Wildlife Biologist Desert National Wildlife Range U.S. Fish and Wildlife Service	Author: Wildlife and Vegetation, including Threatened and Endangered Species, description and consequences	B.S., Natural Resources - Wildlife; 20 years experience as a wildlife biologist including 15 years as the biologist on Desert National Wildlife Range.
David Hardt Primary Assistant Refuge Manager Desert Nat. Wildlife Refuge Complex U.S. Fish and Wildlife Service	Author: Background and purposes of Desert National Wildlife Range	B.S., Fish and Wildlife Management; 16 years experience in refuge management with the Fish and Wildlife Service.
Robert E. Hiller Realty Specialist Division of Realty Refuges and Wildlife Program Pacific Region U.S. Fish and Wildlife Service	Author: Statutory and regulatory procedures of mineral withdrawal, land description of withdrawal	Master of Public Administration; 16 years experience as a Land Law Examiner and Realty Specialist with the Bureau of Land Management and the Fish and Wildlife Service.
Edward Seum Acting District Geologist Las Vegas District Bureau of Land Management	Review of mineral assessment, Author: Geology and mineral development description and consequences	B.A., Geology and Mineralogy; 13 years experience as a geologist including 4 years with Ohio Dept. of Natural Resources, 6 years with U.S. Office of Surface Mining, and 3 years with the Bureau of Land Management.
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PREPARER	ROLE IN EIS	QUALIFICATIONS
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Abigail G. Kucera Natural Resource Specialist Division of Realty Refuges and Wildlife Program Pacific Region U.S. Fish and Wildlife Service	Author: Climate and air quality description and consequences	M.S., Geography; 14 years experience in environmental analysis and land use planning including 3 years with U.S. Environmental Protection Agency and 2 years with the Fish and Wildlife Service.
Peter J. Weher Landscape Architect Division of Engineering Pacific Region U.S. Fish and Wildlife Service	Author: Visual resources description and consequences	Master of Landscape Architecture; 25 years experience as a landscape architect including 10 with the Fish and Wildlife Service.
Ken Voget Refuge Manager Desert Nat. Wildlife Refuge Complex U.S. Fish and Wildlife Service	Scoping and review	B.S. Zoology; 23 years experience in refuge management with the Fish and Wildlife Service.
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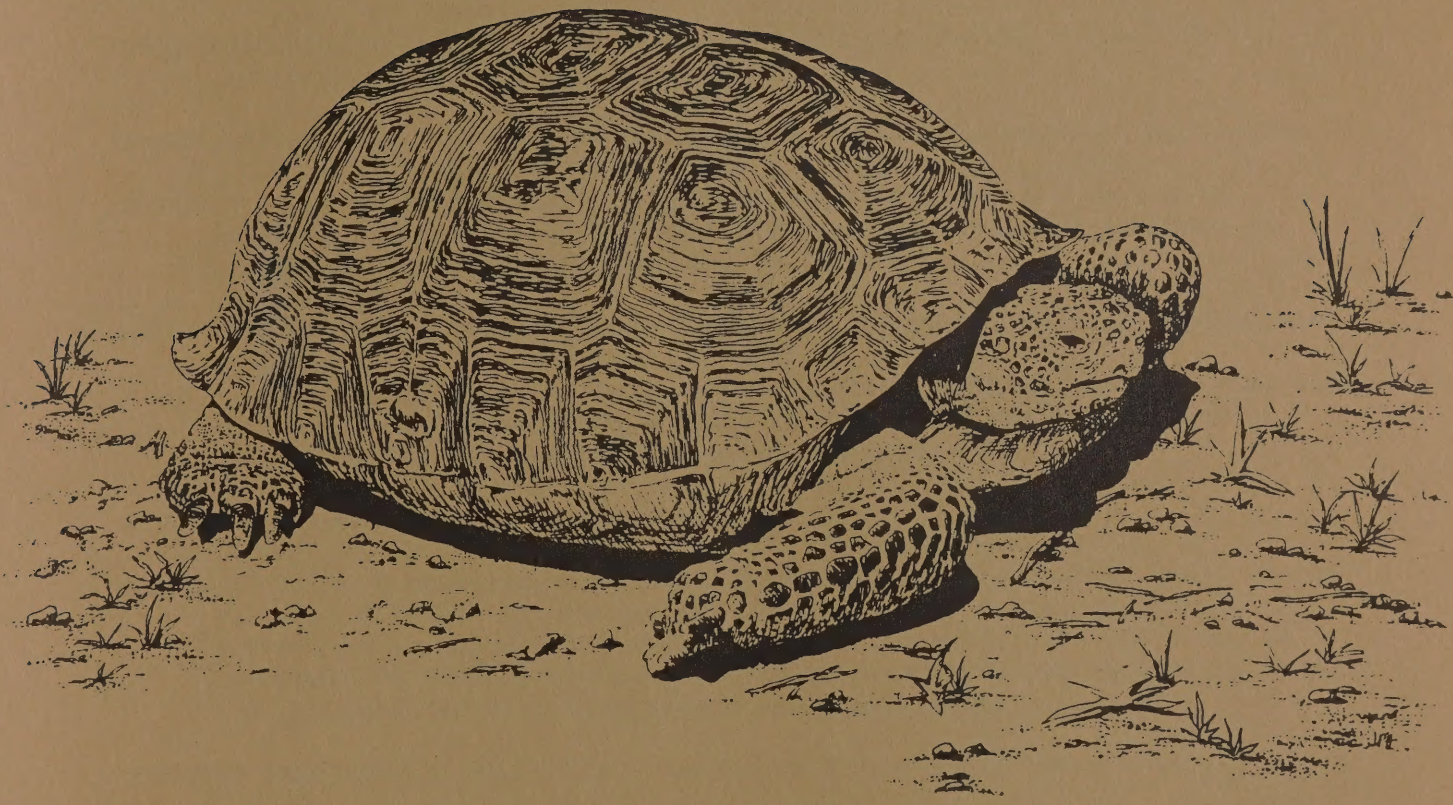
Jacqueline M. Gratton District Realty Specialist Las Vegas District Bureau of Land Management	Bureau of Land Management Cooperating Agency representative, scoping and review	20 years experience with the Federal Government including 15 with the Bureau of Land Management.
Eric Watkins Environmental Specialist Nellis Air Force Base U.S. Air Force	U.S. Air Force Cooperating Agency representative, scoping and review	B.S., Zoology; 12 years experience as an environmental specialist with the Bureau of Land Management and Air Force.

CHAPTER 7

GLOSSARY AND ABBREVIATIONS



CHAPTER SEVEN
7.0 GLOSSARY AND ABBREVIATIONS

AIR FORCE - U.S. Air Force

ALLUVIUM - sediment deposited by flowing water.

ANOMALY - deviation from normal, abnormality.

BAJADA - an alluvial fan.

BIOLOGICAL COMMUNITY - an assemblage of populations of living organisms in a prescribed area.

BIOLOGICAL DIVERSITY - the richness, abundance, and variability of plant and animal species and communities, and the relationships that link them with one another and with soil, air, and water.

BLM - U.S Bureau of Land Management

CARRYING CAPACITY - the maximum population of wildlife the habitat in a particular area is capable of sustaining.

CASUAL PROSPECTING - prospecting without mechanized equipment or explosives.

CATEGORY 2 CANDIDATE THREATENED OR ENDANGERED SPECIES - taxa for which existing information may warrant listing, but for which substantial supporting biological information is lacking.

CFR - Code of Federal Regulations - a publication of all Federal regulations.

CLAIM - A particular tract of land, with value for specific minerals, to which an individual has asserted a right of possession for the purpose of developing and extracting discovered minerals.

CO - Carbon monoxide - an air pollutant.

COMPATIBILITY - A criterion applied to proposed economic uses of units of the National Wildlife Refuge System. Economic uses on refuges may be authorized by permit only when the permitted activities would not be incompatible with (would not materially interfere with or detract from) the purposes for which the refuge was established.

CULTURAL RESOURCES - fragile and nonrenewable remains of human activity.

CUMULATIVE IMPACTS - impacts on the environment that result when an individual action is added to other similar past, present, and reasonably foreseeable future actions.

CUSTODIAL MANAGEMENT - a passive or caretaker form of management that results more in protection than active manipulation of natural resources.

DOMINANT - in ecology, an organism that exerts a major controlling influence on the biological community.

ECOSYSTEM - a biological community and its non-living environment interacting as a system. The basic functional unit in ecology.

EIS - Environmental Impact Statement

EPA - U.S. Environmental Protection Agency

EVAPOTRANSPIRATION - water loss per unit area that results from a combination of evaporation and transpiration by plants.

EXECUTIVE ORDER - A written order by the President of the United States.

FLPMA - Federal Land Policy and Management Act.

FR - Federal Register - A serial publication of Federal announcements and regulations.

GEOCHEMICAL - pertaining to the chemistry of the composition and alterations of the earth's crust.

GEOLOGICAL - pertaining to the study of the origin, history, and structure of the earth.

GEOPHYSICAL - pertaining to the physical properties of geological phenomena, including geodesy (the science of the size and shape of the earth) and seismology (the science of the mechanical properties of the earth).

GROUND WATER - water beneath the earth's surface.

HECTARE - a metric unit of area equal to 2.471 acres.

IRRETRIEVABLE - not capable of being retrieved or recovered.

LEASABLE MINERALS - minerals that may be acquired under the Mineral Leasing Act of 1920, including coal, oil shale, oil and gas, and geothermal.

LOCATABLE MINERALS - minerals that may be acquired under the Mining Law of 1872, as amended, including "all valuable minerals" except those specifically excluded as leasable or salable minerals.

MECHANIZED PROSPECTING - the search for minerals using motor driven machinery.

MILL - buildings and machinery that reduce ore in size or produce a finished product.

MINERAL ENTRY - the process of or application for acquiring minerals.

MINERAL ESTATE - the rights to or ownership of subsurface minerals.

MINERAL WITHDRAWAL - withholding of Federal land from location or entry under some or all of the general mining laws.

MOU - memorandum of understanding

NEPA - National Environmental Policy Act

NOTICE - a written notice to the BLM or other Federal surface management agency that an operator intends to search for locatable minerals using mechanized equipment or explosives, but that surface disturbance will involve less than 5 acres.

PETROGLYPH - a carving or line drawing on rock.

PHYSIOGRAPHY - physical geography

PLAN OF OPERATIONS - a written plan submitted to the BLM or other Federal surface management agency that an operator intends to search for or mine locatable minerals and that surface disturbance will involve more than 5 acres.

PLANT COMMUNITY - an assemblage of populations of plants in a prescribed area.

PLO - Public Land Order - an order that effects, modifies, or cancels a reservation or withdrawal issued by the Secretary of the Interior pursuant to powers of the President delegated to the Secretary.

PM10 - in air quality studies, particulate matter with a diameter equal to or less than 10 microns.

RADIOMETRIC - pertaining to measurement of radioactivity.

RANGE - Desert National Wildlife Range

RECLAMATION - the process of converting mined or disturbed land to its former or other productive use.

RIPARIAN HABITAT - of, on, or adjacent to a lake, pond, stream, or other wetland.

SALABLE MINERALS - minerals that may be acquired under the Materials Act of 1947, including common varieties of sand, stone, gravel, cinders, pumice, and clay.

SCOPING - the process of determining the issues to be addressed and depth of analysis in an Environmental Impact Statement.

SECRETARY - the Secretary of the U.S. Department of the Interior

SECONDARY USE - a use of a national wildlife refuge that is not related to wildlife or another purpose for which the refuge was created.

SEGREGATION - removal for a limited period of Federal land from the operation of the public land laws, including the mining laws, to allow for the orderly administration of the Federal land.

SEISMICITY - a relative level of earthquake or vibration

SERVICE - U.S. Fish and Wildlife Service

SPECIAL USE PERMIT - a conditional permit issued by the U.S. Fish and Wildlife Service for activities otherwise prohibited on national wildlife refuges.

SPLIT ESTATE - a condition where ownership of surface management rights is held separately from ownership of subsurface mineral rights.

TAXA - groups of biological organisms in formal units of taxonomic classification with common characteristics (i.e. species, subspecies)

THREATENED OR ENDANGERED SPECIES - biological taxa that are declared threatened or endangered pursuant to formal requirements of the Endangered Species Act of 1973, as amended.

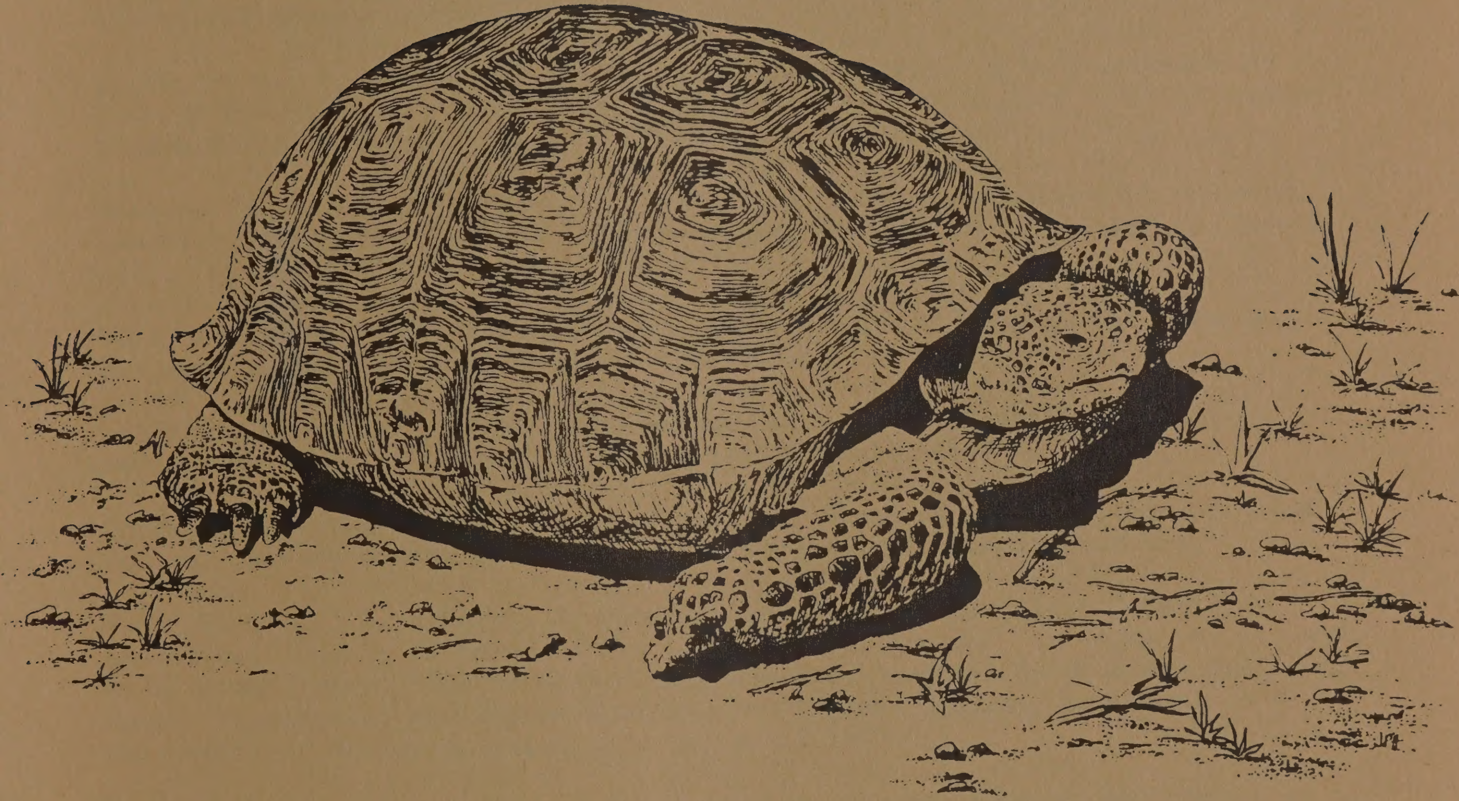
TIÑAJA - a natural rock water catchment.

U.S.C. - United States Code

VISUAL RESOURCES - the scenic properties of a landscape.

WILDERNESS RECOMMENDATION - a formal proposal from the President to the U.S. Congress to create a wilderness area. A wilderness recommendation is the result of a wilderness study.

CHAPTER 8
REFERENCES



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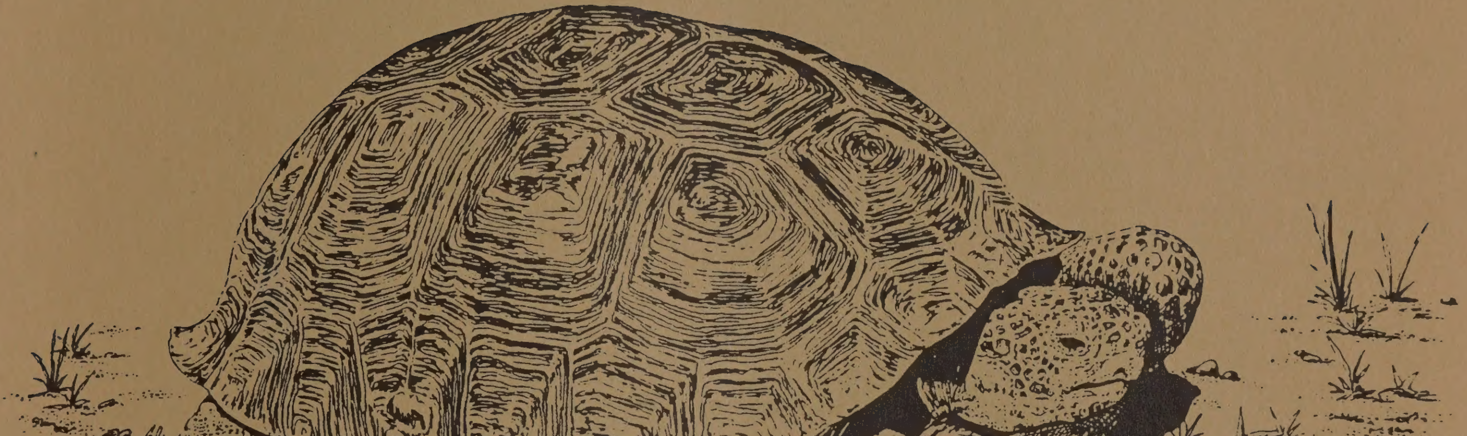
APPENDICES



APPENDIX A

LEGAL DESCRIPTION OF LAND PROPOSED FOR MINERAL WITHDRAWAL DESERT NATIONAL WILDLIFE RANGE

APPENDIX A

LEGAL DESCRIPTION OF LAND PROPOSED FOR MINERAL WITHDRAWAL DESERT NATIONAL WILDLIFE RANGE

MOUNT DIABLO MERIDIAN (MDM), NEVADA

Township 15 South, Range 54 East, unsurveyed
Sections 1 to 3, inclusive, excluding Executive Order (E.O.) 8578;
Section 4, E½, excluding E.O. 8578;
Section 9, E½;
Sections 10 to 15, inclusive;
Section 16, E½;
Section 21, E½;
Sections 22 to 27, inclusive;
Section 28, E½;
Section 33, E½;
Sections 34 to 36, inclusive.
Containing approximately 12,580 acres.

Township 15 South, Range 55 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 26,944 acres.

Township 16 South, Range 57 East, partially surveyed
Section 7, NW¼, S½.
Containing approximately 448 acres.

Township 16 South, Range 58 East, unsurveyed
Sections 11 to 14, inclusive;
Sections 23 to 26, inclusive;
Sections 35 and 36.
Containing approximately 6,498 acres.

Township 15 South, Range 59 East, unsurveyed
Sections 2 to 11, inclusive;
Sections 14 to 23, inclusive;
Sections 26 to 35, inclusive.
Containing approximately 17,786 acres.

Township 16 South, Range 59 East, unsurveyed
Sections 2 to 11, inclusive;
Sections 14 to 23, inclusive;
Sections 26 to 35, inclusive.
Containing approximately 18,035 acres.

Township 17 South, Range 59 East,
Sections 1 to 5, inclusive;
Section 7, lots 3 and 4, NE¼, S½;
Sections 8 to 18, inclusive;
Sections 21 to 26, inclusive;
Sections 27, N½;
Sections 28 and 33;
Section 34, S½S½, NE¼SE¼;
Sections 35 and 36.
Containing approximately 17,432.89 acres.

Township 9 South, Range 60 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 23,809 acres.

Township 10 South, Range 60 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 22,974 acres.

Township 11 South, Range 60 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 23,001 acres.

Township 12 South, Range 60 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 23,027 acres.

Township 12½ South, Range 60 East, unsurveyed
Sections 31 to 36, inclusive.
Containing approximately 3,682 acres.

Township 13 South, Range 60 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 22,950 acres.

Township 14 South, Range 60 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 22,975 acres.

Township 15 South, Range 60 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 23,001 acres.

Township 16 South, Range 60 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 23,027 acres.

Township 17 South, Range 60 East,
Sections 1 to 36, inclusive.
Containing approximately 22,743.33 acres.

Township 18 South, Range 60 East
Sections 1 to 18, inclusive;
Sections 22 to 24, inclusive;
Section 25, N½;
Section 26, N½;
Section 27, N½.
Containing approximately 14,387.76 acres.

Township 9 South, Range 61 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 23,170 acres.

Township 10 South, Range 61 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 22,974 acres.

Township 11 South, Range 61 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 23,001 acres.

Township 12 South, Range 61 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 23,027 acres.

Township 12½ South, Range 61 East, unsurveyed
Sections 31 to 36, inclusive.
Containing approximately 3,679 acres.

Township 13 South, Range 61 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 22,950 acres.

Township 14 South, Range 61 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 22,975 acres.

Township 15 South, Range 61 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 23,000 acres.

Township 16 South, Range 61 East, unsurveyed
Sections 1 to 36, inclusive.
Containing approximately 23,026 acres.

Township 17 South, Range 61 East
Sections 1 to 36, inclusive.
Containing approximately 22,717.61 acres.

Township 18 South, Range 61 East
Sections 1 to 36, inclusive.
Containing approximately 22,932.3 acres.

Township 9 South, Range 62 East

Section 4, S½S½;
Section 5, NW¼SW¼, S½S½;
Section 6, lots 2 to 7, inclusive, and S½NE¼, SE¼NW¼, E½SW¼, SE¼;
Sections 7, 8 and 9;
Section 10, W½E½, W½;
Section 15, W½E½, W½;
Sections 16 to 21, inclusive;
Section 22, W½E½, W½;
Section 27, W½E½, W½;
Sections 28 to 33, inclusive;
Section 34, lots 1 to 3, inclusive, W½NE¼, NW¼, N½SW¼, NW¼SE¼.
Containing approximately 13,149.04 acres.

Township 10 South, Range 62 East

Sections 3 to 10, inclusive;
Section 14, SE¼NW¼, W½W½, E½SW¼;
Sections 15 to 22, inclusive;
Section 23, W½, W½SE¼;
Sections 26 to 35, inclusive;
Section 36, W½W½.
Containing approximately 17,447.63 acres.

Township 11 South, Range 62 East, partially surveyed

Section 1, W½W½;
Sections 2 to 12, inclusive;
Sections 13, E½, NE¼NW¼, W½W½, E½SW¼;
Sections 14 to 36, inclusive.
Containing approximately 22,469.24 acres.

Township 12 South, Range 62 East, partially surveyed

Sections 1 to 36, inclusive.
Containing approximately 20,467.36 acres.

Township 12½ South, Range 62 East, unsurveyed

Sections 31 to 36, inclusive.
Containing approximately 3,535 acres.

Township 13 South, Range 62 East, unsurveyed

Sections 1 to 36, inclusive.
Containing approximately 22,174 acres.

Township 14 South, Range 62 East, unsurveyed

Sections 1 to 36, inclusive.
Containing approximately 22,975 acres.

Township 15 South, Range 62 East, unsurveyed

Sections 1 to 36, inclusive.
Containing approximately 23,000 acres.

Township 16 South, Range 62 East, unsurveyed

Sections 1 to 36, inclusive.
Containing approximately 23,026 acres.

Township 17 South, Range 62 East

Sections 1 to 36, inclusive.
Containing approximately 22,792.85 acres.

Township 18 South, Range 62 East

Sections 1 to 31, inclusive.
Containing approximately 19,754.93 acres.

Aggregating approximately 769,543 acres.

APPENDIX B

SPECIES LISTS FOR DESERT NATIONAL WILDLIFE RANGE

B-1 BIRDS

B-2 MAMMALS

B-3 REPTILES AND AMPHIBIANS

APPENDIX B-1

BIRDS OF THE DESERT NATIONAL WILDLIFE RANGE

Common Name **	Sp	Su	F	W
	Seasonal Abundance			
GREBES				
*Pied-billed Grebe	o	r	o	o
Eared Grebe	o		o	
Western Grebe	o		o	
PELICANS AND CORMORANTS				
Double-crested Cormorant	r	r	r	r
BITTERNS, HERONS, AND EGRETS				
American Bittern	o		o	
Great Blue Heron	o	o	o	r
Great Egret	o		o	
Snowy Egret	o	o	o	
Green-backed Heron	r			
Black-crowned Night Heron	o	o	o	
IBIS AND SPOONBILLS				
White-faced Ibis	o	o	o	
WATERFOWL				
Greater White-fronted Goose	r		r	
Canada Goose	o		o	
Wood Duck	o			
Green-winged Teal	c	u	u	c
Mallard	c		c	c
Northern Pintail	u		u	u
Blue-winged Teal	r		r	
Cinnamon Teal	c	o	c	o
Northern Shoveler	o		o	o
Gadwall	u		u	u
American Wigeon	o		o	o
Canvasback	r		r	o
Redhead	u		u	u
Ring-necked Duck	o		o	o
Less Scaup	o		o	o
Common Goldeneye	o		o	o

** Common names are from the *Check-list of North American Birds, 6th Edition* as standardized by the American Ornithologists' Union (1983).

* - birds known to nest locally

[1] - Endangered or Threatened Species

[2] - Category 2 Candidate Threatened or Endangered Species

c - common
u - uncommon
o - occasional
r - rare

Sp - spring: March through May
S - summer: June through August
F - fall : September through November
W - winter: December through February

Common Name	Sp	S	F	W
Bufflehead	u		u	u
Ruddy Duck	o		o	o
VULTURES				
Turkey Vulture	u	u	u	
OSPREY, KITES, EAGLES AND HAWKS				
Osprey	r	r		
[1]Bald Eagle	r	r		
Nothern Harrier	u	o	u	u
*Sharp-shinned Hawk	u	u	u	o
*Cooper's Hawk	u	u	u	u
[2]*Northern Goshawk	r	r	r	r
Swainson's Hawk	u		u	
*Red-tailed Hawk	u	u	u	o
Furruginous Hawk				r
Rough-legged Hawk			o	o
*Golden Eagle	c	u	u	o
FALCONS				
*American Kestral	c	c	c	c
Merlin	o	r	o	o
[1]Peregrine Falcon	r	r	r	r
*Prairie Falcon	u	u	u	o
GALLINACEOUS BIRDS				
*Gambel's Quail	c	c	c	c
RAILS				
Virginia Rail	r			
Sora	o	r	o	
*Common Moorhen	c	c	c	c
*American Coot	c	c	c	c
PLOVERS				
*Killdeer	u	o	o	
STILTS AND AVOCETS				
Black-necked Stilt	o		o	
American Avocet	u		u	
SHOREBIRDS				
Greater Yellowlegs	o	o	o	
Lesser Yellowlegs		r		
Solitary Sandpiper	r			
Spotted Sandpiper	u	u	u	
Long-billed Curlew	o		o	
Marbled Godwit			o	
Western Sandpiper	o	u	o	
Least Sandpiper	u		u	
Long-billed Dowitcher	o		o	
SNIPE				
Common Snipe	u		o	
PHALAROPES				
Wilson's Phalarope	o			
Red Phalarope	r			
GULLS AND TERNS				
Bonaparte's Gull	o		o	
Ring-billed Gull	o			
California Gull	o		o	
Black Tern	o		o	

Common Name	**Su**	**S**	**F**	**W**
DOVES				
Rock Dove	o	o	o	o
*Band-tailed Pigeon	o	r	o	
White-winged Dove	r	r	r	
*Mourning Dove	c	c	c	r
Common Ground Dove			r	
CUCKOOS				
Yellow-billed Cuckoo	o	o	o	
*Greater Roadrunner	o	o	o	o
OWLS				
*Common Barn-Owl	u	o	u	
Flammulated Owl	u	c	u	
*Western Screech-Owl	o	o	u	o
*Great Horned Owl	o	o	o	o
Northern Pygmy-Owl	u	u	u	u
Burrowing Owl	o	o	o	
Long-eared Owl	u	o	u	o
Short-eared Owl				r
*Northern Saw-whet Owl	o	o	o	
GOATSUCKERS				
*Lesser Nighthawk	u	c	u	
*Common Nighthawk	u	c	u	
*Common Poorwill	u	c	u	
*Whip-poor-will		r		
SWIFTS				
Vaux's Swift	o		o	
*White-throated Swift	u	c	u	
HUMMINGBIRDS				
*Black-chinned Hummingbird	u	o	u	
Anna's Hummingbird			r	
Costa's Hummingbird	o	u		
*Calliope Hummingbird	r	u	r	
*Broad-tailed Hummingbird	u	c	u	
Rufous Hummingbird	o	c	u	
Allen's Hummingbird	r			
KINGFISHERS				
Belted Kingfisher	o		o	
WOODPECKERS				
Lewis' Woodpecker	o		o	
*Yellow-bellied Sapsucker	c	c	c	
Red-breasted Sapsucker	o	r	o	r
*Williamson's Sapsucker	o	u	o	o
*Ladder-backed Woodpecker	c	o	c	c
*Hairy Woodpecker	o	o	o	o
*Northern Flicker	u	o	u	u
FLYCATCHERS				
Olive-sided Flycatcher	o	u	o	
*Western Wood-Pewee	o	u	o	
Willow Flycatcher	o	u	o	
Hammond's Flycatcher	o		o	
*Dusty Flycatcher	u	c	u	
*Gray Flycatcher	o	c	o	o
*Western Flycatcher	o	c	o	
*Black Phoebe	u	u	u	

Common Name	Sp	S	F	W
*Say's Phoebe	c	c	c	u
*Vermilion Flycatcher	o	o	o	
*Ash-throated Flycatcher	o	c	o	
Cassin's Kingbird	o		o	
*Western Kingbird	c	c	c	
Eastern Kingbird		o		
LARKS				
*Horned Lark	c	c	c	c
SWALLOWS				
Tree Swallow	u	c	u	
*Violet-green Swallow	c	c	c	
Northern Rough-winged Swallow	u	o	u	
Bank Swallow	r	r	r	
Cliff Swallow	o	u	o	
Barn Swallow	u	o	u	
JAYS, MAGPIES & CROWS				
*Steller's Jay	u	u	u	u
*Scrub Jay	c	c	c	c
*Pinyon Jay	c	c	c	c
*Clark's Nutcracker	c	c	c	c
American Crow				r
*Common Raven	u	u	u	u
CHICKADEES AND TITMICE				
*Mountain Chickadee	c	c	c	c
*Plain Titmouse	o	u	o	o
VERDIN				
*Verdin	u	o	u	u
BUSHTITS				
*Bushtit	c	c	c	c
NUTHATCHES				
*Red-breasted Nuthatch	o	u	o	o
*White-breasted Nuthatch	u	c	u	u
*Pygmy Nuthatch	c	c	c	c
CREEPERS				
*Brown Creeper	u	u	u	u
WRENS				
*Cactus Wren	o	u	o	r
*Rock Wren	c	c	c	c
*Canyon Wren	o	o	o	o
*Bewick's Wren	o	u	o	o
*House Wren	c	u	c	
Winter Wren				u
*Marsh Wren	o	o	o	o
KINGLETS, BLUEBIRDS AND THRUSHES				
Golden-crowned Kinglet	u	o	r	u
*Ruby-crowned Kinglet	u	o	u	u
*Blue-gray Gnatcatcher	c	c	c	c
*Western Bluebird	o	c	o	o
Mountain Bluebird	u		o	u
*Townsend's Solitaire	u	o	u	c
Swainsons's Thrush	u		u	
*Hermit Thrush	o	c	o	
*American Robin	c	u	c	c

Common Names	Sp	S	F	W
Varied Thrush			u	u
MOCKINGBIRDS AND THRASHERS				
*Northern Mockingbird	c	c	c	o
Sage Thrasher	u	o	u	o
*Bendire's Thrasher	u	u	r	
*Crissal Thrasher	o	o	o	o
*Le Conte's Thrasher	o	o	o	o
WAGTAILS AND PIPITS				
Water Pipit	c		c	c
WAXWINGS				
Bohemian Waxwing				r
*Cedar Waxwing	u	o	u	o
PHAINOPEPLA				
*Phainopepla	c	c	c	c
SHRIKES				
[2]*Loggerhead Shrike	c	c	c	c
STARLINGS AND MYNAS				
*European Starling	u	u	u	c
VIREOS				
Bell's Vireo	o	r		
*Gray Vireo	o	u	o	
*Solitary Vireo	o	c	o	
Hutton's Vireo	o			
*Warbling Vireo	o	o	o	
Red-eyed Vireo	r	r	r	
WARBLERS				
Tennessee Warbler	r		r	r
Orange-crowned Warbler	u	r	u	r
*Nashville Warbler	u	r	u	
*Virginia's Warbler	u	c	u	
*Lucy's Warbler	o	r		
Northern Parula	r		r	
*Yellow Warbler	u	o	u	
Black-throated Blue Warbler			r	r
*Yellow-rumped Warbler	c	c	c	u
*Black-throated Gray Warbler	u	c	u	
Townsend's Warbler	u		u	
Hermit Warbler	r		r	
*Grace's Warbler	c	c		
Black-and-White Warbler	r	r	r	
American Redstart	o		o	
Northern Waterthrush	o	r	o	
MacGillivray's Warbler	u	o	c	
*Common Yellowthroat	o	o	o	
Wilson's Warbler	c	u	u	
*Painted Redstart	r	r		
*Yellow-breasted Chat	o	r	o	
TANAGERS				
Summer Tanager	r	r	r	
*Western Tanager	u	c	u	
GROSBEAKS AND BUNTINGS				
Rose-breasted Grosbeak	r		r	
*Black-headed Grosbeak	u	c	u	

Common name	Sp	S	F	W
*Blue Grosbeak	u	u	u	
Lazuli Bunting	o	u	o	
Indigo Bunting	o	o	r	
TOWHEES AND SPARROWS				
*Green-tailed Towhee	c	c	c	
*Rufous-sided Towhee	c	c	c	c
Abert's Towhee			o	o
American Tree Sparrow	r		r	r
*Chipping Sparrow	c	c	c	
*Brewer's Sparrow	c	u	c	r
*Black-chinned Sparrow	o	o		
Vesper Sparrow	o		o	
Lark Sparrow	u		u	
*Black-throated Sparrow	c	c	c	r
*Sage Sparrow	c	u	c	c
Lark Bunting	o		o	o
Savannah Sparrow	o		u	o
Fox Sparrow	c		c	c
*Song Sparrow	o	o	o	o
Lincoln's Sparrow	u		u	
Swamp Sparrow				o
White-throated Sparrow				o
Golden-crowned Sparrow	r		r	r
White-crowned Sparrow	c		c	c
*Dark-eyed Junco	c	c	c	c
Lapland Longspur			o	
Chestnut-collared Longspur			o	
BLACKBIRDS, MEADOWLARKS AND ORIOLES				
*Red-winged Blackbird	c	u	c	c
*Western Meadowlark	c	o	c	c
*Yellow-headed Blackbird	c	o	c	r
Brewers's Blackbird	c	o	c	o
Great-tailed Grackle	u		u	u
*Brown-headed Cowbird	u	c	u	r
*Hooded Oriole	u	o	o	
*Northern Oriole	u	c	u	
*Scott's Oriole	u	u	u	
FINCHES				
*Cassin's Finch	c	c	c	c
*House Finch	c	c	c	c
*Red Crossbill	u	u	u	u
*Pine Siskin	c	c	c	c
*Lesser Goldfinch	u	o	u	o
*American Goldfinch	o		o	o
Evening Grosbeak	o		o	u
WEAVER FINCHES				
*House Sparrow	c	c	c	c

* - birds known to nest locally

c - common
u - uncommon
o - occasional
r - rare

Sp - spring: March through May
S - summer: June through August
F - fall : September through November
W - winter: December through February

APPENDIX B-2

MAMMALS OF DESERT NATIONAL WILDLIFE RANGE

Common Name	Scientific Name
Yuma Myotis	*Myotis yumanensis*
Long-eared Myotis	*Myotis evotis*
Long-legged Myotis	*Myotis volans*
California Myotis	*Myotis californicus*
Small-footed Myotis	*Myotis subulatus*
Silver-haired Bat	*Lasionycteris noctivagans*
Western Pipistrel	*Pipisttrellus hesperus*
Big Brown Bat	*Eptesicus fuscus*
Hoary Bat	*Lasiurus cinereus*
Western Big-eared Bat	*Corynorhinus rafinesquii*
Pallid Bat	*Antrozous pallidus*
Mexican Freetail Bat	*Tadaria mexicana*
Blacktail Jackrabbit	*Lepus californicus*
Mountain Cottontail	*Sylvilagus nuttallii*
Desert Cottontail	*Sylvilagus audubonii*
Townsend Ground Squirrel	*Citellus townsendii*
Rock Squirrel	*Cittellus variegatus*
Whitetail Antelope Squirrel	*Cittellus leucurus*
Colorado Chipmunk	*Eutamias quadrivittatus*
Cliff Chipmunk	*Eutamias dorsalis*
Hidden Valley Chipmunk*	*Eutamias umbrinis nevadensis*
Valley Pocket Gopher	*Thomomys bottae*
Little Pocket Mouse	*Perognathus longimembris*
Great Basin Pocket Mouse	*Perognathus parvus*
Longtail Pocket Mouse	*Perognathus formosus*
Merriam Kangaroo Rat	*Dipodomys merriami*
Great Basin Kangaroo Rat	*Dipodomys microps*
Desert Kangaroo Rat	*Dipodomys deserti*
Western Harvest Mouse	*Reithrodontomys megalotis*
Canyon Mouse	*Peromyscus crinitus*
Cactus Mouse	*Peromyscus eremicus*
Deer Mouse	*Peromyscus maniculatus*
Brush Mouse	*Peromyscus boylii*
Pinyon Mouse	*Peromyscus truei*
Southern Grasshopper Mouse	*Onychomys torridus*
Desert Woodrat	*Neotoma lepida*
Bushytail Woodrat	*Neotoma cinerea*
House Mouse	*Mus musculus*
Porcupine	*Erethizon dorsatum*
Coyote	*Canis latrans*
Red Fox	*Vulpes fulva*
Kit Fox	*Vulpes macrotis*
Gray Fox	*Urocyon cinereoargenteus*
Ringtail Cat	*Bassariscus astutus*
Badger	*Taxidea taxus*
Spotted Skunk	*Spilogale gracilis*
Striped Skunk	*Mephitis mephitis*
Moutain Lion	*Felis concolor*

Bobcat	***Lynx rufus***
Mule Deer	***Odocoileus hemionus***
Pronghorn	***Antilocapra americana***
Bighorn Sheep	***Ovis canadensis***
Wild Burro	***Equus assinus***

*** Category 2 candidate Threatened or Endangered Species.**

APPENDIX B-3

ANNOTATED LIST OF THE AMPHIBIANS AND REPTILES OF THE DESERT NATIONAL WILDLIFE REFUGE

FROGS

Pacific Treefrog	*Hyla regilla*
Bullfrog	*Rana catasbeiana*

TURTLES

Painted Turtle	*Chysemys picta*

TORTOISE

Desert Tortoise *	*Gopherus agassizzi*

LIZARDS

Banded Gecko	*Coleonyx variegatus*
Chuckwalla **	*Sauromalus obesus*
Zebra-tailed Lizard	*Callisaraurus draconoides*
Collared Lizard	*Crotaphytus collaris*
Leopard Lizard	*Crotaphytus wisilizenii*
Desert Spiny Lizard	*Sceloporus magister*
Western Fence Lizard	*Sceloporus occidentalis*
Sagebrush Lizard	*Sceloporus graciousus*
Side-blotched Lizard	*Uta stansburiana*
Desert Horned Lizard	*Phrynosoma platyrhinos*
Desert Night Lizard	*Xantusia vagilis*
Western Skink	*Eumeces skiltonianus*
Western Whiptail	*Cnemidophorus tigris*

SNAKES

Spotted Leaf-nosed Snake	*Phyllorhynchus decurtatus*
Coachwhip or Red Racer	*Masticophis flagellum*
Striped Whipsnake	*Masticophis taeniatus*
Western Patch-nosed Snake	*Salvadora hexalepis*
Glossy Snake	*Arizona elegans*
Gopher Snake	*Pituophis melanoleucus*
Common Kingsnake	*Lampropeltis getulus*
Long-nosed Snake	*Rhinocheilus lecontei*
Western Ground Snake	*Sonora semiannulata*
Western Shovel-nosed Snake	*Chionactis occipitalis*
Sonora Lyre Snake	*Trimorphodon lambda*
Night Snake	*Hypsiglena torquata*
Speckled Rattlesnake	*Crotalus mitchelli*
Sidewinder	*Crotalus cerastes*

* Threatened Species
** Category 2 Threatened or Endangered Species

The presence of the following species on the Wildlife Range is hypothetical:

AMPHIBIANS

Western Spadefoot	*Scaphiopus hammondi*
Red-spotted Toad	*Bufo punctatus*

LIZARDS

Desert Iguana	*Dipspsaurus dorsalis*
Long-tailed Brush Lizard	*Urosaurus graciosus*
Gila Monster	*Heloderma suspectum*

SNAKES

Western Blind Snake	*Leptotyphlops humilis*
Western Black-headed Snake	*Tantilla planiceps*
Mojave Rattlesnake	*Crotalus scutulatus*

APPENDIX C

CULTURE HISTORY
OF THE DESERT NATIONAL WILDLIFE RANGE AREA

APPENDIX C

CULTURE HISTORY OF THE DESERT NATIONAL WILDLIFE RANGE AREA

The Range has hosted few projects to inventory archaeological or historical resources. However, military, industrial, and commercial development in the neighboring Las Vegas Valley, Muddy River Valley, and Nevada Test Site have stimulated numerous cultural resources investigations near the Range. Archaeological sites from the entire Mojave Desert contribute to the following summary of culture history. Except where cited, it is adapted from Warren and Crabtree (1986) and Lyneis (1982).

Lake Mojave Period, 10,000-5,000 B.C. The best dated evidence for early human occupation of the Mojave Desert comes from the Tule Springs site (Shutler 1967) immediately south of the Range. Elsewhere, artifacts left by the Lake Mojave period hunter-gatherers occur along shorelines of now dry Pleistocene lakes. These sites may represent a wetland orientation during a seasonal round in which the people, concentrating on large game, were highly mobile. Diagnostic artifacts of the Lake Mojave period are shown in figure C-1.

Pinto Period, 5,000-2,000 B.C.. Extreme aridity characterized the Pinto period and people adjusted accordingly. In fact, people may have left the Mojave Desert altogether. Well-dated sites from the Pinto period are rare. At known Pinto sites artifacts are sparse and imply intermittent use of the desert by small groups. The emphasis on hunting may have declined. People began turning to plant foods, but artifacts (grinding stones) of a well developed plant processing technology are absent from most Pinto sites.

Pinto sites are associated with old lake margins, watercourses, and springs. The Corn Creek Dunes Site on the Range returned several radiocarbon dates from hearths that burned some 4,000 to 5,000 years ago (Williams and Orlins 1963). Permanent springs on the Range may have been the only places capable of supporting the small mobile bands that eked out a living during the Pinto period. Figure C-1 shows the diagnostic artifacts of the Pinto period.

Gypsum Period, 2,000 B.C.- A.D. 500. The Gypsum Period experienced a considerable amelioration of the hot and dry climate of the preceding Pinto period. Archaeological sites with diagnostic Gypsum artifacts (Figure C-1) occur all over the Mojave Desert. Large repeatedly occupied encampments occur on the valley floors. The people also foraged in the uplands. During the Gypsum period hunters and gatherers learned to use the complete range of food and tool resources offered by the desert. The people perfected the acquisition and processing of plant foods, especially mesquite and seeds of various plants. By the end of the period hunters had adopted the bow and arrow, alongside the enduring atlatl and dart, as the primary hunting weapon.

Saratoga Springs Period, A.D. 500 - 1,200. The new technologies and adaptations of the Gypsum period enabled the people to withstand the return of arid conditions at the beginning of the next period called Saratoga Springs. The large intensively occupied Gypsum period camps on the valley floors do not continue in the Saratoga Springs period. Temporary camps of small groups of hunters and gatherers dominate the archaeological record of this period. Anasazi horticulturalists established villages along the Muddy River. Fragments of their pottery occur sporadically about the Mojave Desert and on the Range. These artifacts testify to wide-ranging hunting and gathering forays into the desert hinterlands by the Anasazi villagers. The intensive harvest of pinyon nuts for food began during this period. Figure C-1 shows diagnostic artifacts of the Saratoga Springs period.

Shoshonean (Numa) Period A.D. 1,200 - Contact. Anasazi abandonment of southern Nevada marks onset of the Shoshonean period. Speakers of the Numic language family gained complete control of the region and pursued a broad spectrum hunting and gathering lifestyle. The people produced a distinctive brown pottery that, along with Desert series arrowpoints, distinguishes their sites from those of earlier peoples (figure C-1). The Range was used by ancestors of presently recognized Las Vegas, Pahrump, Pahranagat, and Moapa bands of the Southern Paiute (figure C-2) (Kelly and Fowler 1986).

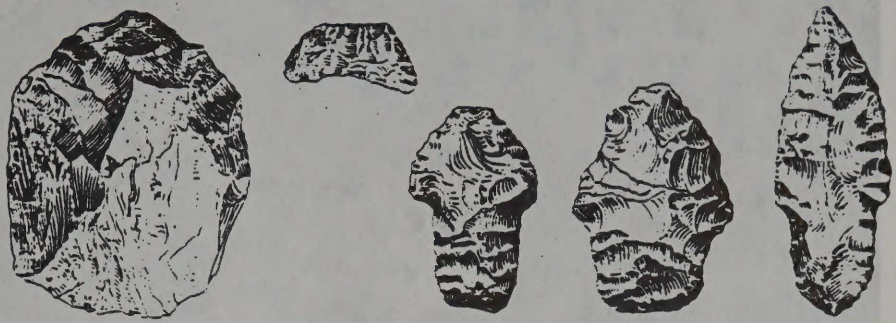
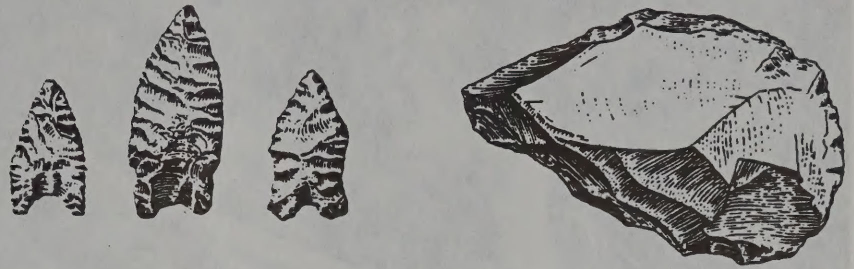
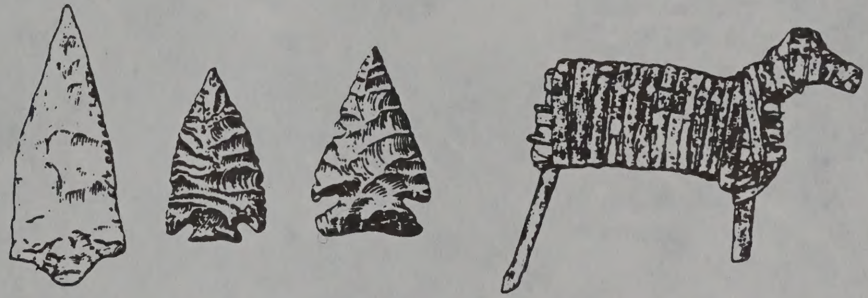
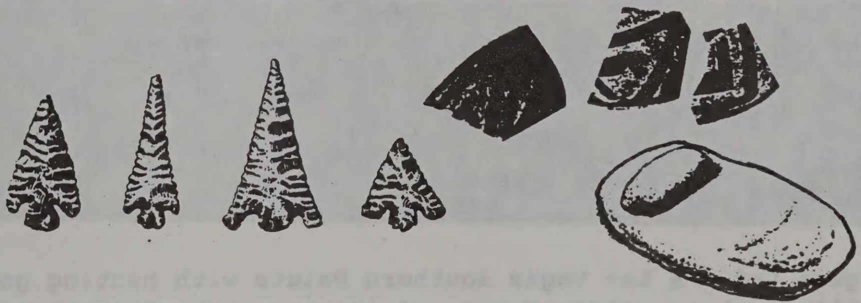
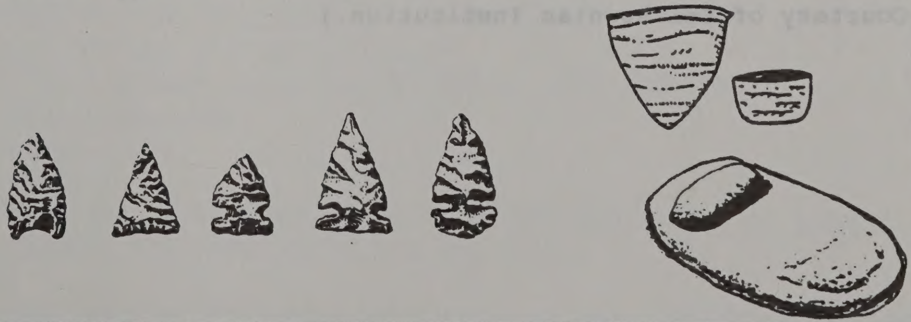
The lifeway of the historic Southern Paiutes provides a model for the lifeway of earlier peoples on the Range. Southern Paiute families moved about the landscape harvesting plant and animal resources as they became seasonally ripe and abundant. Small game, including rabbits, rats, mice, gophers, chuckwallas, and tortoises, furnished most of their protein, but the people hunted deer and mountain sheep whenever possible. Plant foods were the dietary mainstay, however. Pine nuts and agave were harvested intensively as were the seeds of mesquite and grasses. Winters were spent in small camps of conical houses built of timbers and brush. Early spring brought occasional famine when winter stores ran low. In spring and summer families set out from the valleys to the mountains as plant foods ripened at higher elevations. Autumn was a time of plenty and great mobility. Groups shuttled between the high and low country to gather plant food and hunt game at the most favorable locales. Festivals, centering on rabbit drives, pine nut harvests, and sheep hunts, brought together families from a wide area. Marriages were arranged, information was exchanged, and food caches were made for the winter (Kelly and Fowler 1986, Stoffle and Dobyns 1983).

Historic Period, 1829 to Present. The Range has not been the scene of any momentous historic events. Until recently its rugged, arid isolation has kept many Euro-Americans away. However, old world diseases spread unchecked among the Southern Paiutes far in advance of the Euro-American settlers who introduced the diseases. By the time Euro-Americans documented the Paiutelivelihood, epidemics had devastated the population and shattered the social and economic structure of the precontact lifeway (Kelly and Fowler 1986, Stoffle and Dobyns 1983).

A network of trails, called the Old Spanish Trail or Mormon Road, was established in about 1829 by explorers, fur traders, miners, and settlers. The Mormons established a mission in Las Vegas in 1855. By 1900 the Alamo and the Mormon Well wagon roads linked central Nevada gold fields with Las Vegas, and eventually with the Salt Lake-Los Angeles Railroad. Corn Creek was one of several watering stops for freight wagons hauling lumber and supplies to the mining towns in the north. The 1906 Las Vegas-Tonapah Railroad passed within 2 miles of Corn Creek. Cattle began grazing the Range by 1870. Prospecting began in the area in the 1860s, the Groom and Gass Peak mining districts were established by the early 1900s, and the June Bug mine produced $38,000 worth of zinc-lead ore in 1917. (Livingston and Pippen 1989, Williams and Orlins 1963, Kelly et al. 1990).

Figure C-1. Facing Page.

Diagnostic artifacts of cultural periods for the Mojave Desert and Desert National Wildlife Range. From left to right: Lake Mojave period artifacts, heavy duty scraper, crescent, Lake Mojave and Silver Lake spear points. Pinto period artifacts, Pinto series atlatl dart points, scraper plane. Gypsum period artifacts, Gypsum atlatl dart point, Elko series atlatl dart points, split twig figurine. Saratoga Springs period artifacts, Rosegate series arrow points, Virgin Anasazi pottery sherds, seed grinding tools (not to scale). Shoshonean period artifacts, Desert series arrow points, southern Paiute ceramic vessels (not to scale). All projectile points shown about 1/2 actual size. (Adapted from Warren and Crabtree 1986, illustrations from same; and D'Azevedo 1986, except seed grinding equipment by K. Morris, USFWS).

Period	Diagnostic Artifacts
Lake Mohave 10000 — 5000 B.C.	
Pinto 5000 — 2000 B.C.	
Gypsum 2000 B.C. — A.D. 500	
Saratoga Springs A.D. 500 — 1200	
Shoshonean A.D. 1200 - contact	

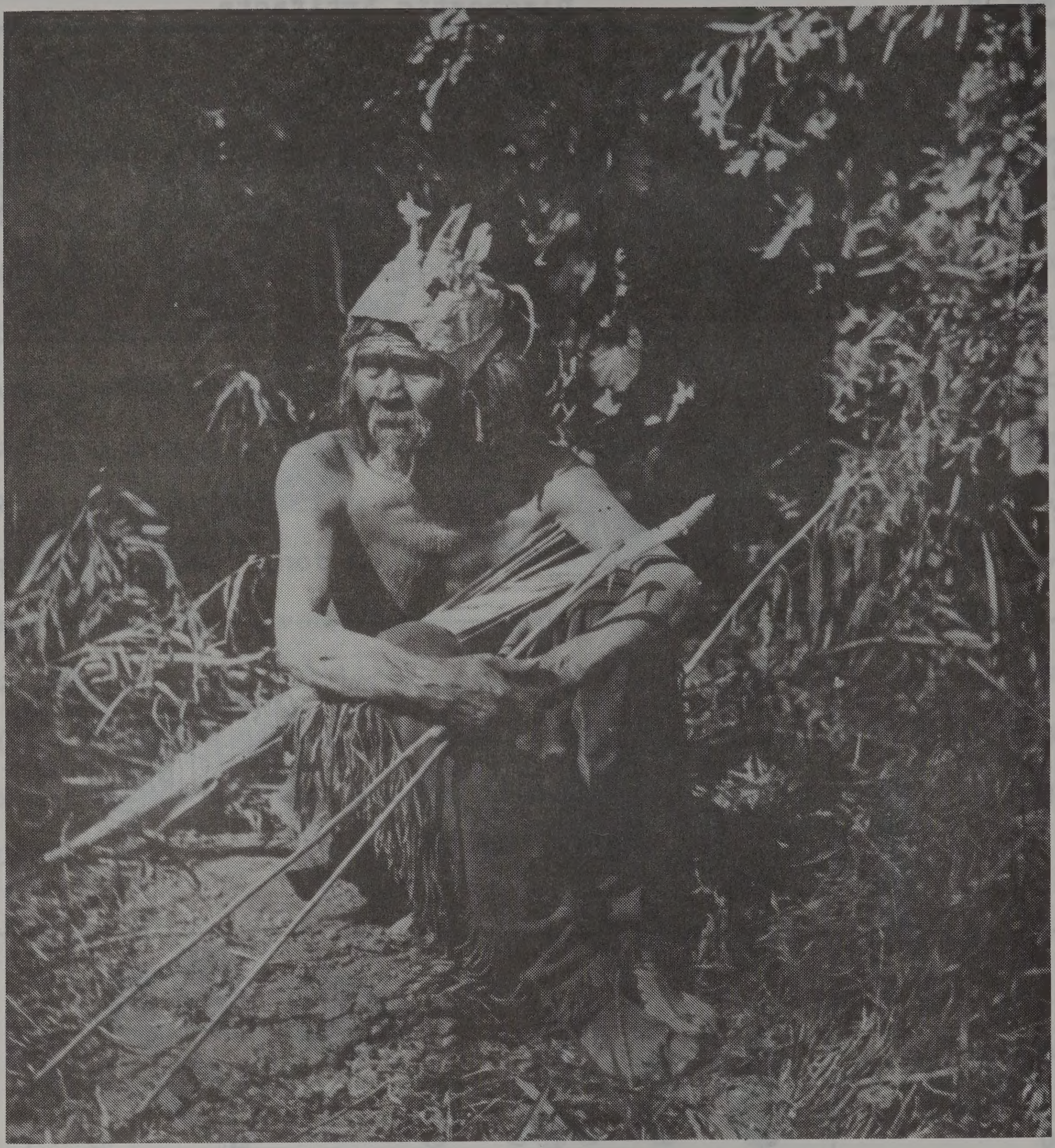


Figure C-2. A Las Vegas Southern Paiute with hunting gear. (Hillers photo, 1873, Bureau of American Ethnology negative 1644. Courtesy of Smithsonian Institution.)

APPENDIX D

STATE AND FEDERAL PERMITS REQUIRED IN NEVADA BEFORE MINING OR MILLING CAN BEGIN

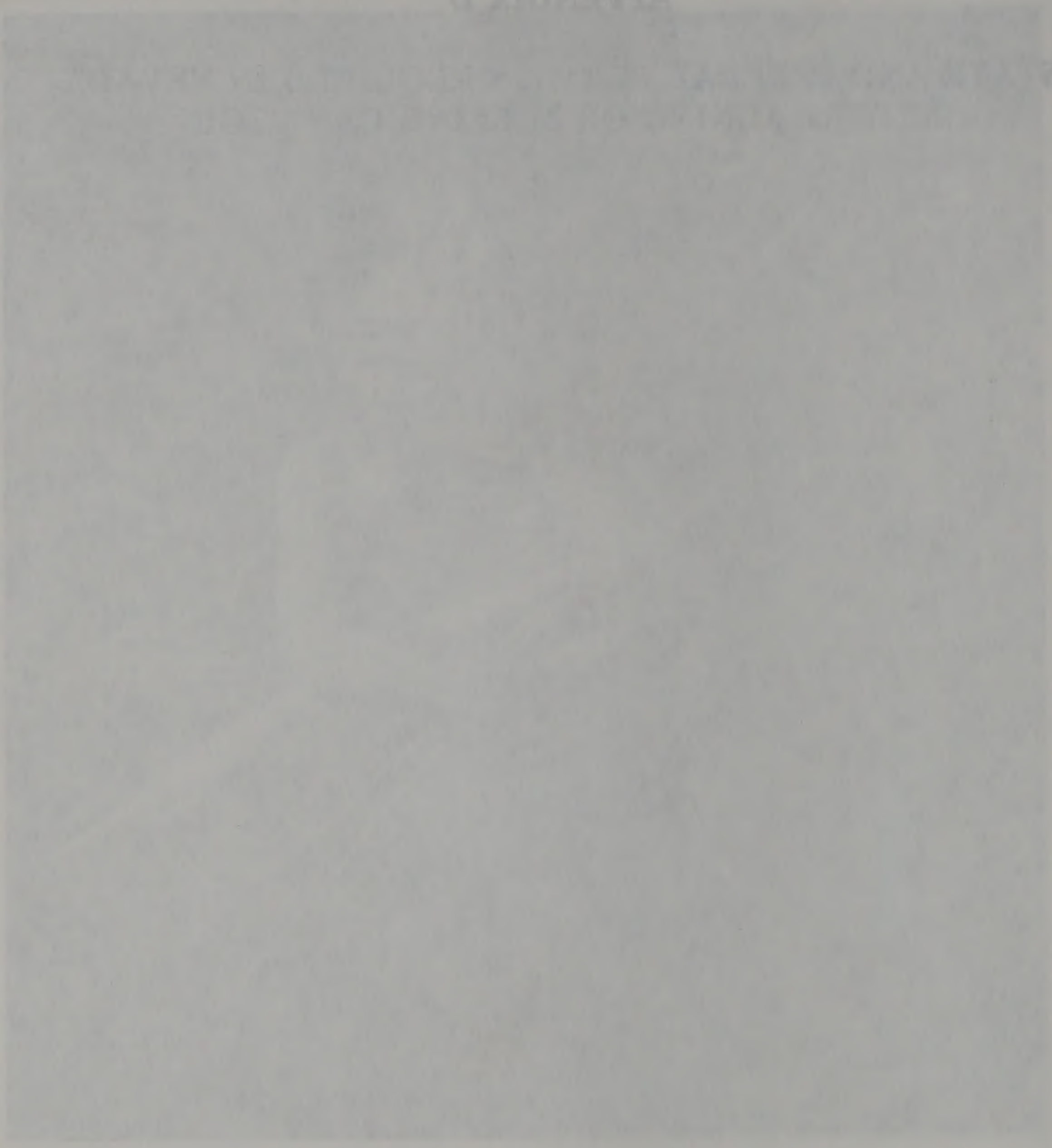


Figure C-[illegible]. A Las Vegas Southern Paiute with [illegible]. (Hillers photo, 1873, Bureau of American Ethnology, Negative [illegible] Courtesy of Smithsonian Institution.)

Nevada Bureau of Mines and Geology
Special Publication L-6
(revised November 1991)

STATE AND FEDERAL PERMITS REQUIRED IN NEVADA BEFORE MINING OR MILLING CAN BEGIN

compiled by Doug Driesner, *Nevada Department of Minerals*

This is a list of State and Federal permits and actions required before and during development, planning, construction, and operation of Nevada mines and mills. We hope it will help both individuals and companies through the complex, often confusing regulatory maze – please understand that not all of these permits are necessarily required for all operations.

Remember that in addition to State and Federal permits, County and City permits may be required. We have included a general description of the required County and City permits. As these may vary, you should contact the local County Planning Commission for specific requirements.

This list will be revised periodically but the user should be aware that additional, new, or revised regulations may have been issued after this list was compiled. We welcome any additions and corrections, as well as any suggestions on how to improve this list. For more information about permitting, contact: Nevada Department of Minerals, 400 W. King Street, Suite 106, Carson City, NV 89710, (702) 687-5050.

STATE REQUIREMENTS

OPENING AND CLOSING MINES

Agency to Contact	State Inspector of Mines 1380 S. Curry Street, Carson City, NV 89710 (702) 687-5243
When Required	Before opening and upon closing mine operations
Required Action	Operators shall notify the Inspector of Mines; the notice must include the name and location of the mine(s), the name and address of the operator, the name of the person in charge of the operation, and a statement of whether the closing is temporary or permanent.
Legal Authority	NRS Chapter 512.160

PERMIT TO APPROPRIATE THE PUBLIC WATERS

Granting Agency	Nevada Division of Water Resources 123 W. Nye Lane, Carson City, NV 89710 (702) 687-4380
When Required	Prior to construction
Maximum time to obtain .	180 days
Minimum time to obtain .	120 days
Cost of permit	$200 application fee plus $150 plus $1 per acre foot applied for; proof of completion, $10; proof of beneficial use, $50.
Public Notice Required .	Yes
Information Required . . .	Location of point of diversion and place of use, use to which water will be applied, and annual consumption of water.
Legal Authority	NRS Chapter 533 and 534

PERMIT TO CONSTRUCT TAILINGS DAM

Granting Agency	Nevada Division of Water Resources 123 W. Nye Lane, Carson City, NV 89710 (702) 687-4380
When Required	Prior to construction
Maximum time to obtain	120 days
Minimum time to obtain	45 days
Cost of Permit	$500 application fee; $100 plus $1 per acre foot annual fee for private non-agricultural dams in excess of 50 acre feet.
Public Notice Required	No
Information Required	Plans and specifications must be filed with application for any tailings dam which will be higher than 10 feet or impound more than 10 acre feet; supportive engineering study.
Legal Authority	NRS Chapter 535

MINERAL EXPLORATION HOLE PLUGGING

Granting Agency	Nevada Division of Water Resources 123 W. Nye Lane, Carson City, NV 89710 (702) 687-4380
When Required	Plugging of exploration holes must usually begin within 30 days after data has been collected from the hole.
Cost	None
Action Required	Contact the Division of Water Resources for details.
Legal Authority	NAC 534

STATE GROUNDWATER PERMIT

Granting Agency	Nevada Division of Environmental Protection Bureau of Water Permits and Compliance 123 W. Nye Lane, Carson City. NV 89710 (702) 687-4670
When Required	Prior to construction
Time to Obtain	Approximately 180 days
Cost of permit	Site dependent, ranging from $300 to $8,000.
Public Notice Required	Yes
Information Required	Site plan; plan and specifications for wastewater treatment plant; geology, hydrology, and soils information (if applicable); flood-plain and drainage area; chemical analysis of groundwater and any discharged fluids; drinking water sources in area; other specific site information.
Legal Authority	NRS 445.131 through 445.354 and NAC 445.070 through 445.241.

NPDES PERMIT

Granting Agency	Nevada Division of Environmental Protection Bureau of Water Permits and Compliance 123 W. Nye Lane, Carson City, NV 89710 (702) 687-4670
When Required	Prior to construction
Time to Obtain	Approximately 120 days
Cost of Permit	Site dependent, ranging from $300 to $8,000
Public Notice Required	Yes
Information Required	Site plan, plans and specifications, soils information (if applicable), flood plain and drainage area, and drinking water sources in area.
Legal Authority	NRS 445.131 through 445.354 and NAC 445.070 through 445.241

UNDERGROUND INJECTION CONTROL PERMIT

Granting Agency	Nevada Division of Environmental Protection Bureau of Water Permits and Compliance 123 W. Nye Lane, Carson City, NV 89710 (702) 687-4670
When to Obtain	Prior to drilling an injection well
Time to Obtain	Approximately 180 days
Cost of Permit	Class III injection fees associated with extraction of minerals are calculated at an application review time of $50 per hour; class V fees associated with mining and pit dewatering range from $2,000 to $4,000.
Public Notice Required	Yes
Information Required	Site plan; plans and specifications for the facility; geology, hydrology, and soils information (if applicable); flood plain and drainage information; chemical analysis of groundwater and discharged fluids; information regarding drinking water sources and wells in the area; verification of financial responsibility; other site and process information.
Legal Authority	NRS 445.131 through 445.354 and NAC 445.422 through 445.4278

WATER POLLUTION CONTROL PERMIT

Granting Agency	Nevada Division of Environmental Protection Bureau of Mining Regulation and Reclamation 123 W. Nye Lane, Carson City, NV 89710 (702) 687-4670
When Required	Prior to initiation of construction of a process component
Time to Obtain	Approximately 165 days
Cost of Permit	Site specific, ranging from $300 to $8,000 for application fee, plus $200 to $4000 annual fee
Public Notice Required	Yes
Information Required	Legal structure of applicant, name of owner of land or mining claims, documentation of notice to local board of county commissioners, annual production, area of review assessment, meteorological report, engineering design report, and draft operating plans.
Legal Authority	NRS 445.131 through 445.354 plus NAC 445.242 through 445.24388

MINING RECLAMATION PERMIT

Granting Agency	Nevada Division of Environmental Protection Bureau of Mining Regulation and Reclamation 123 W. Nye Lane, Carson City, NV 89710 (702) 687-4670
When Required	Prior to initiation of certain exploration projects and mining operations
Time Required	Approximately 180 days
Cost of Permit	$1.50 per acre of affected public land and $2.50 per acre of affected private land; $100 for certain exploration projects; and an annual fee ranging from $500 to $2,000 for certain mining operations.
Public Notice Required	Yes
Surety Required	Yes
Information Required	Legal structure of applicant, reclamation plan, estimated cost of executing reclamation plan, statement of applicant's responsibility for reclamation, and map depicting area covered by surety.
Legal Authority	NRS 519A.010 through 519A.240 plus 519A.270 and 519A.280

AIR QUALITY PERMIT TO CONSTRUCT

Granting Agency	Nevada Division of Environmental Protection, Bureau of Air Quality 123 W. Nye Lane, Carson City, NV 89710 (702) 687-5065
When Required	90 days prior to construction

Time Required	90 days
Cost of Permit	Determined upon review of application
Public Notice Required	Dependent on scope of proposed activity
Information Required	Legal structure of applicant, map of site area, description of source, completed application form provided by the Bureau, and environmental evaluation.
Legal Authority	NRS 445.401 through 445.601 plus NAC 445.430 through 445.846
Note	Activity in Carson City, Clark, or Washoe Counties must also contact respective county air pollution agencies.

AIR QUALITY PERMIT TO OPERATE

Granting Agency	Nevada Division of Environmental Protection, Bureau of Air Quality 123 W. Nye Lane, Carson City, NV 89710 (702) 687-5065
When Required	Prior to permanent operation
Time Required	180 days to demonstrate compliance
Cost of Permit	Determined by final operation of facility
Public Notice Required	No
Information Required	Determined by Bureau of Air Quality
Legal Authority	NRS 445.401 through 445.601 plus NAC 445.430 through 445.846
Note	Activity in Carson City, Clark, or Washoe Counties must also contact respective county air pollution agencies.

APPROVAL TO OPERATE A SOLID WASTE SYSTEM

Granting Agency	Nevada Division of Environmental Protection, Bureau of Waste Management 123 W. Nye Lane, Carson City, NV 89710 (702) 687-5872
When Required	Prior to operation of any solid waste system
Time Required	Variable, depending on system
Cost of approval	None
Public Notice Required	No
Information Required	Information on location, design, operation, and maintenance of system
Legal Authority	NRS 444.440 through 444.620
Note	Activity in Carson City, Clark, and Washoe Counties should also contact county agencies.

HAZARDOUS WASTE MANAGEMENT PERMIT

Granting Agency	Nevada Division of Environmental Protection, Bureau of Waste Management 123 W. Nye Lane, Carson City, NV 89710 (702) 687-5872
When Required	Prior to construction of facility for management or recycling of hazardous waste as identified by NAC 444.8850
Required Action	Contact Bureau of Waste Management
Fees	Dependent on cost of application review
Legal Authority	NRS 459.400 through 459.600

HISTORIC PRESERVATION

Agency to Contact	Nevada Division of Historic Preservation and Archaeology 123 W. Nye Lane, Carson City, NV 89710 (702) 687-5138
When Required	Prior to actual mining
Required Action	Submit a legal description with map of the area to be disturbed so NDHPA can determine if it is within any particular state historic preservation area.
Legal Authority	Sec. 106 National Historic Preservation Act of 1966 as amended.

ENDANGERING WILDLIFE

Agency to Contact	Nevada Department of Wildlife 1100 Valley Road, Reno, NV 89512 (702) 688-1500
When Required	Prior to construction and operation
Required Action	Ascertain whether or not the mining operation would endanger fish and game habitat, etc.
Legal Authority	NRS 445, 501.181, NAC 504.520

DREDGING PERMIT

Agency to Contact	Nevada Department of Wildlife 1100 Valley Road, Reno, NV 89512 (702) 688-1500
When Required	Prior to operation
Time to Obtain	10 days
Cost of Permit	$5.00
Required Action	Contact Nevada Department of Wildlife
Legal Authority	NRS Chapter 503.425

INDUSTRIAL ARTIFICIAL POND PERMIT

Agency to Contact	Nevada Department of Wildlife 1100 Valley Road, Reno, NV 89512 (702) 688-1500
When Required	Prior to operation
Required Action	Contact Nevada Department of Wildlife
Time to Obtain	Up to 30 working days
Cost of Permit	$100 per year for the permit itself. Permit holders are also assessed an annual operation fee based on the tons of material processed the previous fiscal year. Assessment fees range from a low of $0 to a high of $10,000.
Legal Authority	NRS 502.390 plus 502.460 through 502.495

HAZARDOUS MATERIALS PERMIT

Agency to Contact	State Fire Marshal Division, Hazardous Materials Section Capitol Complex, Stewart Facility, Bldg. 107 Carson City, NV 89710 (702) 687-4290
When Required	Prior to construction
Required Action	Section 80.103(a) Uniform Fire Code, 1988 Edition; no person, firm or corporation shall store, dispense, use or handle hazardous material in excess of quantities specified in Section 4.108 unless and until a valid permit has been issued pursuant to this article.
Cost of permit	$100
Legal Authority	NAC 477.325

FIRE AND LIFE SAFETY

Agency to Contact	State Fire Marshal Division Capitol Complex, Stewart Facility, Bldg. 107 Carson City, NV 89710 (702) 687-4290
When Required	Prior to construction and operation
Required Action	Architectural plans for the construction remodel, addition or alteration of any building in a county with a population of less than 25,000 shall be reviewed for the non-structural features of fire and life safety.
Fee Schedule	Fee is based upon the proposed cost of construction
Legal Authority	NAC 477.740 and NAC 477.750

PERMITS FOR SANITATION FACILITIES

Granting Agency	Nevada Division of Health, Consumer Health Protection Services 505 E. King St., Carson City, NV 89710 (702) 687-4750
When Required	Prior to construction
Maximum Time to Obtain	30 days
Minimum Time to Obtain	5 days
Cost of Permits	Drinking water supply, $150 fee for plan review plus $90 per year to operate; sewage system, $200 fee for plan review
Public Notice Required .	No
Information Required . . .	Contact Nevada Division of Health for details concerning: Labor camp (NRS 444), Public bathing place (NRS 446), Mobile home park (NRS 439.200), Camp kitchen and dining room (NRS 446), Drinking water supply (NRS 445), Recreational vehicle and park (NRS 439.200), Sewage system (NRS 444), Subdivision (NRS 278).

LICENSE FOR RADIOACTIVE MATERIAL

Granting Agency	Nevada Division of Health, Radiological Health Section 505 E. King St., Carson City, NV 89710 (702) 687-5394
When Required	Prior to use of radioactive material in Nevada
Required Action	Apply for license with the Nevada Division of Health
Time Required	2-3 weeks
Cost of License	$100 per year
Legal Authority	NRS Chapter 459

MINE REGISTRY FORMS

Agency to contact	Nevada Department of Minerals 400 W. King St., Suite 106, Carson City, NV 89710 (702) 687-5050
When Required	Within 30 days after a mine operation begins
Required Action	Operators shall submit a completed form for registration.
Legal Authority	NRS 513.063 and 513.073

ANNUAL STATUS AND PRODUCTION REPORT

Agency to Contact	Nevada Department of Minerals 400 W. King St., Suite 106, Carson City, NV 89710 (702) 687-5050
When Required	On or before April 15 of each year
Required Action	Operators shall submit a report relating to the annual status and production of the mine for the preceding calendar year.
Legal Authority	NRS 513.063 and 513.073

FEES FOR ABATEMENT OF HAZARDOUS CONDITIONS

Agency to Contact	Nevada Department of Minerals 400 W. King St., Suite 106, Carson City, NV 89710 (702) 687-5050
When Required	Within 30 days after approval of a plan of operation or amended plan of operation, or within 30 days after filing a notice of intent
Required Action	Operators shall provide the department with a copy of the plan of operation, amended plan of operation or notice of intent.
Fees	For a plan of operation or amended plan of operation, $20 for each acre or partial acre to be disturbed. For a notice of intent, $20 regardless of acreage to be disturbed.
Legal Authority	NRS 519A.250

USE OF BLM-ADMINISTERED LAND

Agency . . . . Bureau of Land Management (BLM)
State Office:
850 Harvard Way, P.O. Box 12000, Reno, NV 89520 (702) 785-6576
District Offices:
Winnemucca - 705 E. 4th St., Winnemucca, NV 89445 (702) 623-1500
Carson City - 1525 Hot Springs Rd., Suite 300, Carson City, NV 89706 (702) 885-6000
Elko - 3900 East Idaho St., P.O. Box 831, Elko, NV 89801 (702) 753-0200
Ely - HC 33, Box 150, Ely, NV 89301 (702) 289-4865
Las Vegas - 4765 W. Vegas Dr., P.O. Box 26569, Las Vegas, NV 89126 (702) 647-5000
Battle Mountain - Box 1420, Battle Mountain, NV 89820 (702) 635-4000
Susanville - P.O. Box 460, Cedarville, CA 96104 (916) 279-6101

When Required . . . . . . Affects lands open to mining and administered by BLM (except lands under wilderness review). The surface management regulations (43 CFR 3809) incorporate three levels of operation: 1) Casual use by operator who does negligible disturbance. No notice or plan required. Need not contact BLM. Does not include use of mechanized earth-moving equipment or explosives; 2) Notice - surface disturbance of 5 acres or less. A written notice must be submitted to BLM 15 days prior to starting operations. Notice must describe the operation, location, and access, and must contain a statement that the lands will be reclaimed to the standards spelled out in the regulations. Operator must notify BLM when reclamation is completed so an inspection can be made. No approval necessary; 3) Plan of operation - disturbance of more than 5 acres or if operations are proposed in Wild and Scenic River areas, areas of critical environmental control, National Wilderness Preservation System, or off-road vehicle closed areas. A plan of operation must describe the entire operation, equipment to be used, location of access, support facilities, drill sites, measures to prevent undue degradation and reclamation plan. BLM acknowledges receipt of plan; 30 days to act; 60 day extension if necessary; reclamation required for all operations. BLM approves plan. Bonding is required.

USE OF BLM-ADMINISTERED LAND UNDER WILDERNESS REVIEW

Granting Agency . . . . . Bureau of Land Management, District Offices

When Required . . . . . . A plan of operations submitted under the 43 CFR 3802 regulations shall include appropriate environmental protection and reclamation measures. An approved plan of operations within lands under wilderness review is required prior to commencing: 1) mining operations which involve construction of means of access, or improving or maintaining such access facilities in a way that alters the alignment, size, and character of such facilities; 2) operations which destroy trees 2 or more inches in diameter; 3) mining operations using tracked or mechanized earth-moving equipment; 4) mining operations using motorized vehicles over an area that has been designated as "closed" to off-road vehicles, unless the use of a motorized vehicle can be covered by a temporary use permit; 5) construction or placing of any mobile, portable, or fixed structure on public land for more than 30 days; 6) mining operations requiring the use of explosives; 7) any operation which may cause changes in a water course. A plan of operation is not required when: 1) searching for and occasionally removing mineral samples or specimens; 2) operating motorized vehicles over open use areas and trails; 3) maintaining or making minor improvements to existing access routes or other facilities; 4) making geological, radiometric, geochemical, geophysical, or other tests using instruments, devices or drilling equipment which are transported without using mechanized earth-moving equipment or vehicles. Bonding is required for approved plans of operations.

TEMPORARY USE OF BLM-ADMINISTERED LAND

Granting Agency	Bureau of Land Management, District Offices
When Required	Prior to use
Maximum Time to Obtain	90 days
Minimum Time to Obtain	15 days
Cost of Permit	Variable. Consult BLM district offices
Public Notice Required	No
Information Required	Location of use area, proposed use, cost of use development, and archaeological and historical clearances.

RIGHT OF WAY FOR ELECTRIC TRANSMISSION ON BLM-ADMINISTERED LAND

Granting Agency	Bureau of Land Management, District Offices
When Required	Prior to construction
Maximum Time to Obtain	Approximately 6 months
Minimum Time to Obtain	Approximately 20 days
Cost of Permit	Filing and monitoring fees are based on a right-of way category determined by BLM upon receipt of application. Rental is determined by a fee schedule based on acreage, location and type of use. Consult BLM district offices.
Public Notice Required	No
Information Required	Corridor route, archaeological and historical clearances, methods of construction, and notice of completion (within 90 days).

ROAD ACCESS (R/W) ON BLM ADMINISTERED LAND

Granting Agency	Bureau of Land Management, District Offices
When Required	Prior to construction
Maximum Time to Obtain	Approximately 6 months
Minimum Time to Obtain	Approximately 30 days
Cost of Permit	Filing and monitoring fees are based on a right- of-way category determined by BLM upon receipt of application. Rental is determined by a fee schedule based on acreage, location and type of use. Consult BLM district offices.
Public Notice Required	No
Information Required	Corridor route, archaeological and historical clearances, methods of construction, and notice of completion (within 90 days).

PATENTING MINING CLAIMS

Granting Agency	Bureau of Land Management 850 Harvard Way, P.O. Box 12000, Reno, NV 89520 (702) 785-6510
When Required	When desired by claim holder
Maximum Time to Obtain	24 months - after BLM receipt of Mineral Survey and Application
Minimum Time to Obtain	10 months
Patenting Cost	Filing fee of $250 plus $50 for each additional claim after first claim and proof that not less than $500 has been expended for development of each claim. Purchase price: lode claim - $5 per acre; placer claim - $2.50 per acre; mill site - $5 per acre. Legal fees and mineral survey costs are variable depending on each specific case.
Public Notice Required	Yes, posted on claim and local newspaper
Information Required	Mineral survey plat, field notes, proof of posting on claim, evidence of title, proof of citizenship, and publishers agreement.

ALL USES OF NATIONAL FOREST SYSTEM LAND

Agency	Toiyabe National Forest Supervisor's Office, 1200 Franklin Way, Sparks, NV 89431 (702) 331-6444 Carson Ranger District, (702) 882-2766 Bridgeport Ranger District, (619) 932-7070 Austin Ranger District, (702) 964-2671 Tonopah Ranger District, (702) 482-6286 Las Vegas Ranger District, (702) 447-7782
Agency	Humboldt National Forest Supervisor's Office, 976 Mountain City Hwy, Elko, NV 89801 (702) 738-5171 Mountain City Ranger District, (702) 763-6691 Ruby Mountain Ranger District, (702) 752-3357 Jarbidge Ranger District, (208) 543-4129 Ely Ranger District, (702) 289-3031 Santa Rosa Ranger District, (702) 623-5025 Lamoille Ranger District, (702) 753-6220
When Required	Any mineral development or exploration activities conducted under the General Mining Law of 1872 on National Forest System lands must be approved pursuant to the Surface Management Regulations (36 CFR 228). An operator must provide information describing the proposed activity to the District Ranger. Operations which will cause significant surface disturbance will require an approved plan of operations and a reclamation bond. Road Use Permits and other Special Use Permits may be required for access and utilities. Operators must also obtain all applicable state permits.

PURCHASE, TRANSPORT, OR STORAGE OF EXPLOSIVES

Agency to Contact	Bureau of Alcohol, Tobacco and Firearms (BATF) 801 I Street, Sacramento, CA 95814 (916) 551-1323
When Required	Permit required before purchasing explosives from out of state source and/or transporting explosives across a state line. License required before manufacturing, selling, or importing explosives. License is required for persons mixing two-component explosives. Storage requirements apply to all persons storing explosives even if no license or permit is held.
Required Action	Obtain license or permit. Information and necessary forms can be obtained from the BATF Law Enforcement Office, 350 S. Center St., Reno, NV 89501, (702) 784-5251.

NOTIFICATION OF COMMENCEMENT OF OPERATION

Granting Agency	Mine Safety and Health Administration 3680 Grant Drive, Reno, NV 89509 (702) 784-5892
When Required	Prior to start-up
Information Required . . .	Location, estimated commencement date, safety training plan, and legal identity.

CITY/COUNTY REQUIREMENTS

General Plan: Many counties are governed by a general plan and have adopted special land use ordinances with regard to this general plan. Mining may be allowable in certain areas but not in others, such as agricultural or housing districts.

Building Permit: Many counties require the issuance of a building permit prior to construction of any structure. Cost of the permit may vary depending on extent and type of construction. There must be prior approval for construction from the Nevada State Health Division.

Special Use Permit: Various counties require special use permits in relation to mining activities. A full description of all phases of the proposed operation is required. Cost of the permit may vary among counties. Public notice is generally required.

Zoning Change: A description of the proposed mining operation is required for a zoning change for industrial use. Often in open use zones, a special use permit may be required. Public notice is generally required.

Business License: Various city and county governments require any firm, person, association, or corporation to have a license before engaging in any business activities.

APPENDIX E

INTERNAL SECTION 7 EVALUATION AND LIST OF ENDANGERED, THREATENED, AND CANDIDATE SPECIES THAT MAY OCCUR ON THE DESERT NATIONAL WILDLIFE RANGE

INTRA-SERVICE SECTION 7 EVALUATION FORM
CONSULTATION/CONFERENCE/CONCURRENCE

Originating Person: Mark Strong
Date: May 15, 1992

I. Region: One

II. Service Activity: Realty/Refuge Administration

III. A. Listed species and/or their critical/essential habitat.

1. **Within the action area that will or may be affected:** None
2. **Within the action area that will not be affected:** All--see attached list.

B. Proposed species and/or proposed critical habitat.

1. **Within the action area that will or may be affected:** None
2. **Within the action area that will not be affected:** All--see attached list.

IV. Geographic area or station name and action: Desert National Wildlife Range. The proposed action is to withdraw the mineral estate from entry under the General Mining Law of 1872, as amended, on approximately 740,000 acres of the Range (see attached figure) for 20 years. The proposed withdrawal would protect the Range from exploration, claiming, and extraction of locatable minerals. Refer to the attached description of the proposed action for further details.

V. Location (attach map): That part (approximately 740,000 acres in the eastern half and a rectangle in the southwest corner) of the Desert National Wildlife Range which is not secondarily withdrawn for the Nellis Air Force Range.

A. County and State: Clark and Lincoln Counties, Nevada

B. Section, township, and range: The withdrawal would occupy approximately 32 townships between T. 9 S. and 18 S., and between Range 55 E. and 62 E., Mt. Diablo Meridian.

C. Distance (miles) and direction to nearest town: Approximately 10 miles north of Las Vegas, Nevada, at its closest point.

VI. **Action objectives:** Protect desert bighorn sheep, endangered species, proposed wilderness, and an outstanding example of a diverse desert ecosystem by preventing prospecting and mining for locatable minerals.

VII. **Explanation of impacts of action:** Action would not be expected to affect any listed or candidate threatened or endangered species. Action would reestablish a withdrawal that is due to expire in October, 1993, and thereby maintain wildlife habitats in their current condition for an additional 20 years.

VIII. Effect determination and response requested.

A. Listed species/critical/essential habitat:

Determination	Response Requested
_X_ will not affect	___ *concurrence
___ beneficial effect	___ concurrence
	___ *formal consultation
___ is not likely to adversely affect	___ concurrence
	___ *formal consultation
___ is likely to adversely affect	___ formal consultation

B. Proposed species/proposed critical habitat:

Determination	Response Requested
_X_ will not affect	___ *concurrence
___ beneficial effect	___ *concurrence
___ is not likely to adversely affect	___ *concurrence
___ is likely to adversely affect	___ *concurrence
___ is likely to jeopardize/adverse modification of critical habitat	___ conference

Remarks:

*optional

SECTION 7 EVALUATION CONCURRENCE

PLANNING SUPERVISOR,
PLANNING BRANCH Charles Houghton **DATE** 5-22-92

Comments:

PROJECT LEADER, SE Mary Jo Elpers **DATE** 6/25/92

Comments:

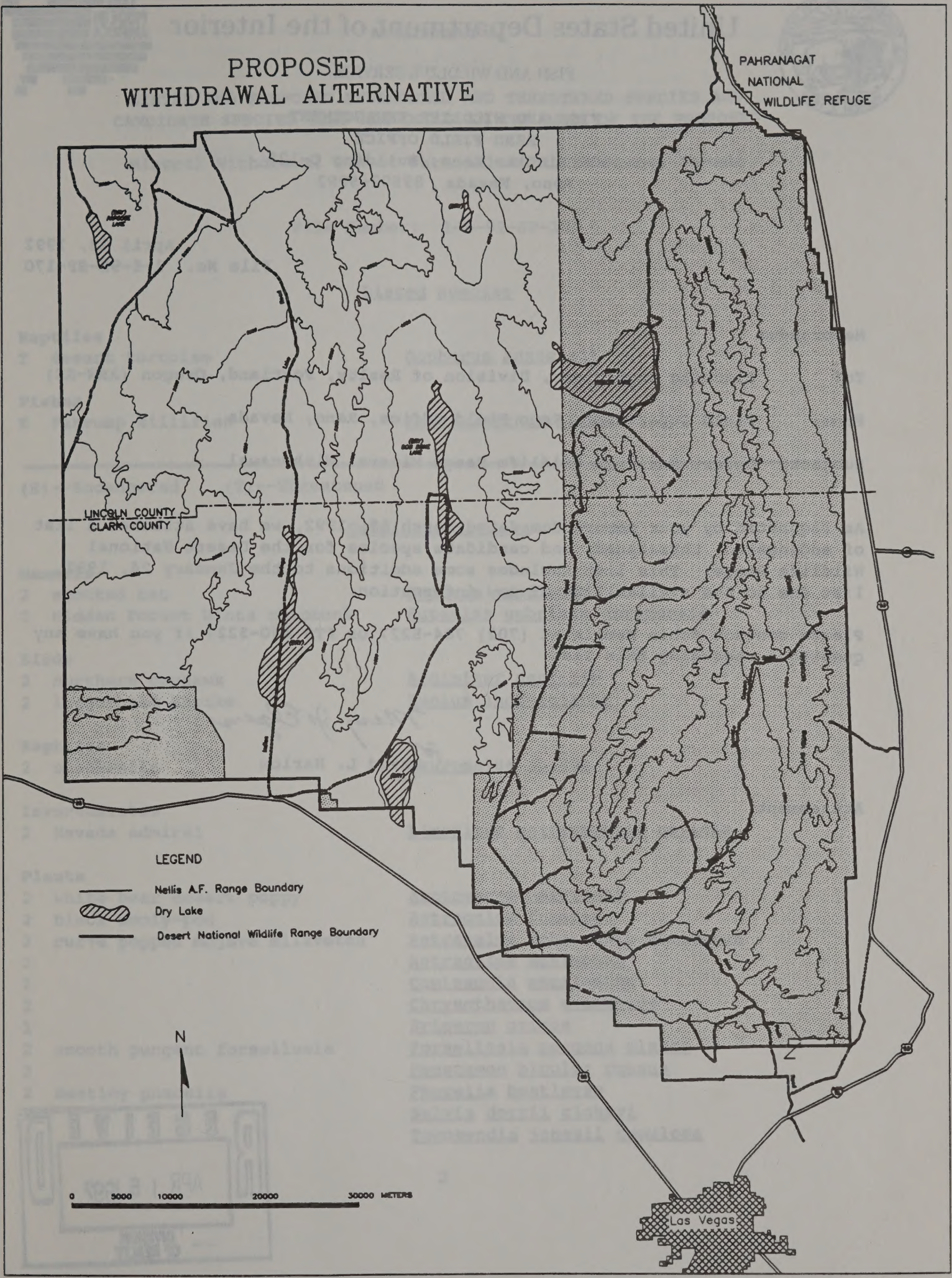
ARD-ARW **DATE** 5/26/92

Comments:

Acting **ARD-AFWE** J.W. Teeter **DATE** 6-30-92

Comments:

PROPOSED WITHDRAWAL ALTERNATIVE


PAHRANAGAT NATIONAL WILDLIFE REFUGE
LINCOLN COUNTY
CLARK COUNTY
LEGEND
Nellis A.F. Range Boundary
Dry Lake
Desert National Wildlife Range Boundary
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5000
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Las Vegas

United States Department of the Interior

TAKE PRIDE IN AMERICA

FISH AND WILDLIFE SERVICE

FISH AND WILDLIFE ENHANCEMENT
RENO FIELD OFFICE
4600 Kietzke Lane, Building C-125
Reno, Nevada 89502-5093

April 13, 1992
File No. 1-5-92-SP-170

Memorandum

To: Planning Supervisor, Division of Realty, Portland, Oregon (ARW-RE)

From: Field Supervisor, Reno Field Office, Reno, Nevada

Subject: Desert National Wildlife Range Mineral Withdrawal

As requested by your memorandum dated March 18, 1992, we have attached a list of endangered, threatened, and candidate species for the Desert National Wildlife Range. This list includes some additions to the January 24, 1992, list due to the availability of new information.

Please contact Robin Hamlin at (702) 784-5227 or FTS 470-5227 if you have any questions regarding this list.

Mary Jo Elpers
For David L. Harlow

Attachment

RECEIVED
APR 16 1992
DIVISION OF REALTY

ATTACHMENT A

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES THAT MAY OCCUR IN THE AREA OF THE PROPOSED

Mineral Withdrawal Desert National Wildlife Range, Nevada

File Number: 1-5-92-SP-170

Listed Species

Reptiles

T	desert tortoise	Gopherus agassizii

Fishes

E	Pahrump killifish	Empetrichthys latos

(E)--Endangered (T)--Threatened

Candidate Species

Mammals

2	spotted bat	Euderma maculatum
2	Hidden Forest Uinta chipmunk	Eutamias umbrinus nevadensis

Birds

2	northern goshawk	Accipiter gentilis
2	loggerhead shrike	Lanius ludovicianus

Reptiles

2	chuckwalla	Sauromalus obesus

Invertebrates

2	Nevada admiral	Limenitus weidemeyerii nevadae

Plants

2	white bear desert poppy	Arctomecon merriamii
2	black wooly-pod	Astragalus funereus
2	curve popped mojave milkvetch	Astragalus mohavensis hemigyrus
2		Astragalus musimonum
2		Camissonia megalantha
2		Chrysothamnus eremobius
2		Erigeron ovinus
2	smooth pungent forsellesia	Forsellesia pungens glabra
2		Penstemon bicolor roseus
2	Beatley phacelia	Phacelia beatleyae
2		Salvia dorrii clokeyi
2		Townsendia jonesii tumulosa

(2)--Category 2: Taxa for which existing information indicated may warrant listing, but for which substantial biological information to support a proposed rule is lacking.

APPENDIX F

UPDATE, DESERT NATIONAL WILDLIFE RANGE PROPOSED MINERAL WITHDRAWAL AND ENVIRONMENTAL IMPACT STATEMENT

UPDATE

DESERT NATIONAL WILDLIFE RANGE

PROPOSED MINERAL WITHDRAWAL ENVIRONMENTAL IMPACT STATEMENT

Number 1 **December 1992**

The U.S. Fish and Wildlife Service sent you a public notice in January 1992 to advise you of our proposal to withdraw part of the Desert National Wildlife Range from mineral entry and our intent to prepare an Environmental Impact Statement (EIS) on the proposal. At that time we planned to complete a draft EIS and release it for public review and comment by November 1, 1992.

However, due to unavoidable delays in completing a mineral inventory of the Range, the EIS schedule has been postponed for approximately 6 months. We now expect to release the draft EIS during mid-April 1993. The attached scoping report will provide you with the available information on the proposed withdrawal, the scope of the EIS, and the revised schedule for the EIS.

Updates such as this will be used during the EIS process to keep you informed of our progress. If you would like more information or have additional comments, please contact, Mark Strong, at 503/231-2235 or write:

Mark Strong, EIS Team Leader
Desert NWR Mineral Withdrawal
U.S. Fish and Wildlife Service
911 Northeast 11th Avenue
Portland, Oregon 97232-4181

SCOPING REPORT

June 1992

PROPOSED MINERAL WITHDRAWAL
ENVIRONMENTAL IMPACT STATEMENT
DESERT NATIONAL WILDLIFE RANGE

Proposal: The U.S. Fish and Wildlife Service (Service) proposes to withdraw approximately 740,000 acres of the Desert National Wildlife Range (Range) from mining entry for a period of 20 years to protect the biological communities of the Range. The remainder of the Range is overlapped by the Nellis Bombing Range withdrawal and is closed to mining under Public Law 99-606. The proposed withdrawal would reinstate a mining closure which expired in October, 1991. A notice of the proposed withdrawal was published in the Federal Register (Vol. 56, No. 202, p. 52283) on October 18, 1991. That notice closed the Range from mining for up to two years while the withdrawal application is completed and evaluated. The proposed withdrawal would not affect the status of leasable minerals such as oil and gas or saleable minerals such as sand and gravel. Applications for extraction of these classes of minerals are administered under existing regulations.

Background: The Desert National Wildlife Range was established in 1936 by Executive Order of President Franklin D. Roosevelt, and changed to its current configuration and size of 1,588,459 acres in 1966. The Range was originally established for the protection, enhancement, and maintenance of wildlife, especially the desert bighorn sheep. Other objectives of the Range are to protect the desert tortoise, a Federally listed threatened species, and other candidate threatened or endangered species; and to protect an outstanding example of a diverse desert ecosystem.

A wilderness proposal for approximately 80 percent of the range was sent to Congress by the President in 1974 with the recommendation that action be deferred until a mineral survey was completed. Pending congressional action, the Range is being managed to maintain the wilderness values identified in the proposed wilderness areas.

The Service has primary jurisdiction over the Range. There have been numerous secondary military withdrawals which affected the Range starting before World War II. The most recent military withdrawal was enacted by Public Law 99-606 in 1986 on approximately the western half of the Range. U.S. Air Force use of the Range under this withdrawal is subject to the terms and conditions of a Memorandum of Understanding signed by the Secretary of the Interior and the Secretary of the Air Force on March 15, 1986.

All of the land now encompassed by the Range was open to prospecting and mining prior to the military withdrawals in 1941 and 1962. That portion which is now proposed for the new withdrawal remained open until it was closed by a withdrawal application in 1973. No significant mining operations were known to have occurred prior these withdrawals. A mineral assessment is currently being completed to provide updated information on mineral deposits.

Environmental Impact Statement: The Service, with the participation of the U.S. Bureau of Land Management and the U.S. Air Force as cooperating agencies, is preparing an Environmental Impact Statement (EIS) on the proposed mineral withdrawal. The purpose of this EIS is to satisfy the legal requirements of the National Environmental Policy Act (NEPA).

Public Involvement Process: A Notice of Intent to prepare an EIS on the Proposed Mineral Withdrawal at Desert National Wildlife Range, Lincoln and Clark Counties, Nevada was published in the Federal Register on January 16, 1992. The Notice of Intent announced that the public comment period associated with the scoping process would be open from February 1, 1992 through March 15, 1992. It was also announced that public scoping meetings would be held on the EIS on February 25, 1992 in Las Vegas, Nevada and on February 27, 1992 in Alamo, Nevada.

On January 16, 1992 a letter was sent to all Federal, State, and County elected officials which represent Clark and Lincoln Counties, Nevada; pertinent State and Federal agencies; and an extensive list of mining/mineral and environmental organizations. The letter notified all recipients of the proposed withdrawal and announced the public scoping meetings referenced above.

On February 10, 1992 a news release was sent to 13 statewide and local news outlets announcing the withdrawal proposal, the EIS process, and the opportunity to provide comments on the scope of the EIS. Prior to the public meetings a fact sheet was developed to provide to all who attended the public meetings and to anyone requesting more information by telephone or mail. The fact sheet contained essentially the same information as is presented in this scoping report.

On February 25, 1992 and February 27, 1992 public scoping meetings were held in Las Vegas and Alamo, Nevada. A total of 11 people attended these meetings including one newspaper reporter, and a total of 5 pertinent comments or concerns were expressed. Also, a total of five letters were received in response to the Notice of Intent and the notification letter.

Scope of the EIS: The geographic scope of the EIS will focus on the Range, the regional area of Clark and Lincoln Counties, the city of Las Vegas and the community of Alamo. The resource scope of the EIS will emphasize protection and management of the desert ecosystem of the range, especially its wildlife and habitat, and its relationship with exploration and extraction of available minerals.

Issues and Concerns: Prior to the public scoping period, the EIS Interdisciplinary Team developed a list of resources which could potentially be affected by the proposed withdrawal. Addditions were made to the list of resources as a result of the public input. The key issues which will be analyzed in the EIS are an evaluation of impacts to those potentially affected resources listed below:

--Wildlife (including endangered species) and wildlife habitat
--Plant communities and species (including endangered species)
--The desert ecosystem
--Outdoor recreation, visual resources
--Wilderness values as identified in the wilderness proposal
--Cultural resources (Archaeological, historical)
--Water quantity and quality
--Air Quality
--Local and regional economy and social values
--Minerals - economic and strategic
--Military use

Comments received from the public during the scoping period were consolidated into the following list of issues and concerns. These issues and concerns will be also be addressed in the EIS.

- Develop a contingency plan to allow utilization of significant mineral deposits
- Consider the compatibility of state-of-the art exploration and mining techniques
- Expand the mineral withdrawal area to include the Air Force Bombing Range
- Include the completed mineral assessment in the EIS
- Proceed with the withdrawal to protect wildlife and habitat
- Do no proceed with the withdrawal because mining is needed for the economy
- Conduct a mineral assessment using state-of-the-art exploration technology
- Evaluate the socio-economic impacts of withdrawing exploration and mining
- Include leasable and saleable minerals in the withdrawal

Range of Alternatives to be considered in the EIS:

a. Exclusive Wildlife Range Withdrawal Alternative - To withdraw from locatable mineral entry that portion of the Desert National Wildlife Range (approximately 740,000 acres) which is not withdrawn for military use under Public Law 99-606. This alternative will include an analysis of the socio-economic impacts of the withdrawal.

b. No Action - the area proposed for withdrawal would be open to mineral entry under the 1872 mining law. This alternative will include a description of mining activity that would be likely to take place and the resulting impacts to wildlife and the ecosystem.

c. Primary Wildlife Habitat Withdrawal Alternative - Areas most important for wildlife would be withdrawn. This alternative will include a description of the areas to be withdrawn and the area left open for mining under the 1872 mining law. It will also include a description of the mining activity that would be likely to take place and the resulting impacts to wildlife and the economy.

d. Wilderness Proposal Withdrawal Alternative - The area proposed for wilderness status would be withdrawn. This alternative will include a description of the wilderness proposal area to be withdrawn and the area to be left open for mining. It will also include a description of the resulting impacts to wildlife and the economy.

Schedule: The schedule for completing the EIS and important milestone dates are as follows:

February 1 to March 15, 1992 --- Public scoping period to receive input on the scope, issues and alternatives for the EIS.
April 16, 1993 --- Scheduled filing of draft EIS with E.P.A. and release to public.
June 15, 1993 --- End public comment period on the draft EIS.
August 30, 1993 --- Scheduled filing of final EIS with E.P.A. and release to public.
September 30, 1993 --- Scheduled completion of Record of Decision

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